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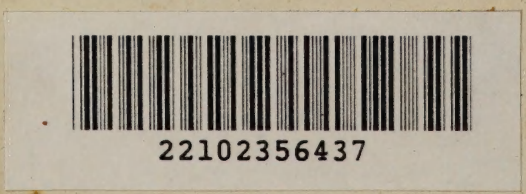
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THE DUBLIN JOURNAL

OF

MEDICAL SCIENCE:

JULY 1, 1879.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*On an Epidemic of Fever caused by Infected Milk.*[a] By C. A. CAMERON, M.D.; S.Sc.C. Cambridge; L.K.Q.C.P.I.; Fellow and Professor of Hygiene and Chemistry, Royal College of Surgeons; Medical Officer of Health for Dublin, &c.

ABOUT Christmas, 1878, several cases of typhoid fever occurred in houses situated in Raglan-road and Elgin-road, Pembroke Township, a suburb of Dublin. Towards the end of January circumstances led me to investigate the cause of the outbreak. I was not long in discovering that all the households affected were supplied with milk from a particular dairy, and also that the owner of the dairy had been ill with fever since the middle of December. I subsequently ascertained that two children had been ill with fever of some kind during December, and that all the patients had remained in a small house attached to the dairy.

THE DAIRY.

An examination of the dairy showed that it was situated under the following conditions:—The proprietor and his family resided in a small two-story house, situated in a court off a street in the eastern part of the city. The front door opened directly into the court; there was no back door, because the house was built against

[a] Read before the Medical Society of the King and Queen's College of Physicians, Wednesday, May 7, 1879. [For the discussion on this paper see page 66.]

the wall of other and separate premises. On the right-hand side of the house a door led into a yard in which the cows, to the number (at the date of my visit) of twenty-two, were placed under open sheds.

The following are the dimensions of the yard and sheds:—The yard is 50 feet in length and 12 feet wide. On the right-hand side of it, and extending from the house to the further extremity of the yard, there are sheds 39 feet in length and $8\frac{1}{2}$ feet in width. On the opposite side there are sheds extending from the entrance into the yard to a stable for horses—a length of $29\frac{1}{2}$ feet, with a width of $14\frac{1}{2}$ feet. The stable which terminates the shedding is 24 feet in length and $12\frac{2}{3}$ feet in width. At the end of the yard there is a space for the deposition of manure; it is 9 feet long and $8\frac{1}{2}$ feet wide. Over the gateway there is a hay-loft. A portion of one of the walls of the house constitutes one side of the gateway, and against this wall there are shelves affixed. Upon these shelves, at the date of my visit, I observed several milk-vessels, which were, of course, fully exposed to the atmosphere of the yard. The gateway is 30 feet in length, and the completely open part of the yard is thereby reduced to a length of 20 feet and a breadth of 12 feet—240 square feet. Altogether, the premises are small and confined, as might be expected in a city court.

At the date of my inspection the yard and sheds were, I am bound to say, cleaner than is usual in dairy-yards.

ABSENCE OF SANITARY ACCOMMODATION.

I found that there was neither water-closet nor latrine in connexion with either house or yard. At the end of the yard—most remote from the house, and quite close to the cows—I found an accumulation of cow manure and litter. On the top of this heap I noticed a contribution from the household, consisting of ashes, human ejecta, and the other effete matters which usually are consigned to the water-closet and ashpit. I was informed that the refuse from the dwelling-house was daily deposited upon the dung-heap, and that the admixture of the two compounds was removed once or twice a week.

The milk utensils, or at least some of them, were placed on shelves against the walls—partly of the house, partly of the yard, and close to the gateway. During the removal of the manure, &c., they could hardly escape, especially on a windy day, from particles of solid matter getting into them. There did not seem to be a

regular dairy apartment in the place. Some of the dairy operations were conducted in the kitchen, which opened direct into the yard, but the major portion of the dairy processes appears to have been conducted in the yard and sheds.

ILLNESS IN THE HOUSEHOLD.

I have made inquiries as to the nature of the illness from which three members of the family suffered, and the following are the results at which I have arrived:—

On 15th December, 1878, a little girl, child of the proprietor, was seen for the first time by the physician who subsequently had charge of her father. He informs me that she was suffering from what is commonly termed gastric fever, but that she had neither diarrhœa nor rash. How long she was ill before medical advice was procured for her I am unable to tell. A lady living in Lower Mount-street, and in whose house three cases of fever occurred in December—to be adverted to presently—informs me that early in December she heard that a child of the person who supplied her with milk was ill. It will be conceded that when a patient is first seen in typhoid or allied fever, illness has probably been present for a week or two. In several of the cases of typhoid fever which I purpose referring to further on, the patients were two or three weeks ill before they came under medical treatment. From what I have discovered in connexion with the subject matter of this paper, I am altogether disposed to believe that this child's illness began late in November.

About 30th December, a little boy, who had been ill for a fortnight, "showed symptoms of cerebro-spinal meningitis, which became very severe, but yielded to treatment." There was no diarrhœa or rash.

About the middle of December the father had an attack somewhat similar to that of the boy's, but in a fortnight it was believed to be typhus. There were abundant eruption and delirium. Dr. Harley has given me the following particulars relative to this case:—"Bronchitis was developed, and after seven days the patient began to convalesce, when he relapsed into a low form of fever, accompanied by a few rose spots. No diarrhœa or delirium. A severe attack of double pneumonia, with very abundant expectoration." The man was only able to be removed for change of air in the early part of February. During his illness he drank milk abundantly.

I presume that at least in the latter stages of this man's illness few will doubt but that he suffered from typhoid fever. One thing is very clear—there was no lack of fever-poison of the typhoidal kind in this dairy during the month of December.

HOW DID TYPHOID POISON GET INTO THE MILK?

The facts which I shall bring forward presently will clearly prove, I think, that fever was spread in December last by means of milk supplied from the dairy which I have now described. The question arises—How did the *materies morbi* get into the milk? I shall endeavour to answer it satisfactorily. The milk may have been contaminated first by actual particles of the dejections of the patient getting into it. A strong wind blowing into the yard would certainly waft particles of coal-ash and similar light substances from the dung-heap, and distribute them throughout the yard. To these particles minute portions of human ejecta might have adhered. The milk-vessels and the milk itself might have had some of these particles deposited therein. If contagia exist at all, we know they must consist of almost infinitely minute portions of organised matter.

Immediately after milk has been withdrawn from the cow it is strained through muslin, and a sediment, often rather considerable in quantity, is separated from the liquid. I have carefully examined this sediment with the microscope, and I find that it consists of a great variety of substances—epithelial *débris*, hairs of the cow, cow-dung, straw, hay, vegetable fibres of various kinds, soot, clay, ashes, wool, linen, cotton, and other substances—mostly, of course, in fine dust. If mixed ashes and excrement deposited in a small yard be thrown up upon an open cart by pitchfork and shovel, it is evident that fine particles therefrom must be discharged into the air, and float about in it for some time before subsiding to the ground or attaching themselves to walls, &c. The beautiful experiments of our great countryman, Tyndall, have shown us that the air teems with solid particles—mineral, vegetable, and animal.

With respect to the dairy-yard—which in the following pages will be referred to as Mr. X.'s—there is nothing far-fetched in the theory that solid particles of a contagious nature floated about in its atmosphere during the month of December, and that some of them were deposited in the vessels which contained the milk, and which we have seen were generally kept in the yard. All who are acquainted with dairy management are well aware how readily milk

absorbs foul gases and vapours. In well arranged dairies great precautions are taken to ensure the purity of their atmosphere; for it has been established that effluvia from a manure-heap, &c., if admitted into a dairy, are likely to injure the quality of the butter produced therein. That potable water is a vehicle for the transmission of typhoid poison I firmly believe, in common with the immense majority of physicians and sanitarians. If I were of a contrary opinion I should not have written this paper. If it be conceded that water can take up typhoid poison, why not milk? There is strong evidence to show that the water in the cisterns which supply water-closets often becomes impregnated with the poison of typhoid. If this be true, then the water must be contaminated by gases and vapours from the water-closet carrying mechanically up with them solid particles from the soil-pipe or pan of the closet. The gases which result from the decomposition of organic matter do not give typhoid, but they are the vehicles upon which the contagium is conveyed. I have no doubt, therefore, but that milk exposed to the air of a confined place in which the stools of a typhoid patient are undergoing putrefactive changes is just as likely to absorb the solid particles carried into the air from these stools as is the water in the cistern over the water-closet. An eminent pathologist attributed an outbreak of typhoid in Caius' College, Cambridge, to the use of pipe-water, which had absorbed whilst still in the main pipe, sewer gases. If in a high-pressure main there be a small hole, the water will pass out through it in the form of a long fine jet. The opening of a tap near the hole will cause the jet to cease, and will produce an insuction of air into the pipe, which may be, as was the case at Caius' College, from a foul source. How much more likely is it not that milk exposed to the air of a yard in which excrement is decomposing would absorb foul gases! The family of the sick man were the persons who managed the dairy. They tended the three patients and manipulated the milk. Trade and domestic operations were simultaneously conducted in premises of very limited size. It is certain that some of the vessels which contained the milk entered the house through the kitchen door, which aperture gave passage outwards to the vessels which contained the slops of the house. Let us hope that the two sets of vessels never came into actual contact during these operations!

WAS POLLUTED WATER PUT INTO THE MILK?

This question can be easily answered in the negative. In the first place, there was no pump or well on the premises; secondly, the Vartry pipe-water was available, and the tap was in good order; and, lastly, Mr. X. was noted for the good quality of his milk supply. Indeed, my analysis of it proved its freedom from adulteration.

NUMBER OF PERSONS WHO DRANK THE INFECTED MILK.

Although there were twenty-two cows in the dairy, fully one-third of the animals were not giving milk. The person in charge of the place informed me that only about two dozen households were supplied with milk from this dairy, but I subsequently ascertained that during December about forty households obtained their milk from it. How many more were supplied I am unable to state. In some of the households more than one gallon of milk was daily taken. It is certain that the fourteen cows could not have supplied a very much larger number of families than forty or fifty; but on this point I have no positive evidence to give. The quantity of milk sent out from the dairy is a point of great importance in connexion with the subject of this paper. Some of the great milk purveying establishments of England supply hundreds of families. If amongst 500 families using milk from a particular dairy typhoid occurred almost simultaneously amongst a dozen of them, the circumstance might perhaps be fairly regarded as a mere coincidence, or at most a suspicious occurrence. When, however, we find the majority of the customers of a particular dairy becoming much about the same time affected with fever of the typhoid nature, whilst their neighbours who are supplied with milk from other sources escape, the inference that the milk is the proximate *origo mali* is almost irresistible; and further, when we learn that fever had existed for many weeks in the suspected dairy, that the dejections of the patients were allowed to decompose close to the cows and the milk vessels, and that the dissemination of the fever was *pari passu* with the distribution of the milk, the inference may not unfairly become a certain belief.

I have already given evidence as to the insanitary state of the dairy under discussion, of the existence of fever therein, and of the total absence of sanitary accommodation. I shall now offer the further and, as I think, conclusive evidence as to the large

number of persons who, having used the milk from Mr. X.'s dairy, became ill in consequence thereof.

DISTRIBUTION OF THE MILK.

The houses supplied by Mr. X. were of the best class, and a large proportion of his customers appear to have lived on two fashionable roads—namely, Elgin-road and Raglan-road. He also supplied houses situated in Fitzwilliam-square, and in a few other places in the south-eastern part of the city and in Pembroke Township.

I might have extorted from the persons in charge of the dairy a list of their customers; but as I do not approve of the principle of forcing people to give evidence against themselves, I did not resort to that measure.

As very many of Mr. X.'s customers were in Raglan-road, Elgin-road, and Fitzwilliam-square—the localities, too, noted for the amount of typhoid disease which appeared in them lately—I endeavoured to ascertain in relation to every house in these localities—

1. Whether or not fever of the typhoidal kind had occurred in it since November.
2. The source of its milk supply.
3. Any other particulars I could gather in the cases where fever had occurred.

I did not take the same amount of trouble in the other localities, as the customers of Mr. X. in them were very few. As it was I found the inquiry a very laborious one, involving much correspondence and visiting.

ELGIN-ROAD CASES.

The houses on this road number thirty-three, and of these two were vacant during last December. Twelve of the households were supplied with milk from Mr. X.'s dairy, eighteen from ten other dairies, and one from a cow kept on the premises. Out of the twelve households supplied by Mr. X. with milk, six were invaded by typhoid shortly before or after Christmas, 1878. In not one of the twenty households supplied with milk from other sources did fever of any kind occur for a period of some months before Christmas till the date of my inquiries, which were not completed till April, 1879.

Case I.—A little girl, the daughter of the Rev. Mr. Weldon (who kindly permits me to publish his name in this paper), became seriously

ill on the 26th December, and was attended by Dr. Chapman. The case was severe and long-continued, and it appears was clearly one of typhoid. Both diarrhœa and rash were present, but the diarrhœa was not persistent. Mr. Weldon informs me that this child was the only member of his family who liked to drink raw milk—his other children having rather a dislike towards that article. Mr. Weldon mentioned to me that the man who delivered the milk remarked upon one occasion that it was an extraordinary circumstance that there was sickness in all the families he was distributing milk to!

Case II.—Mr. Travers Smith, a student of medicine of Trinity College, resided with his uncle at 7, Elgin-road. He drank the milk from X.'s dairy constantly. On the 20th December he left town for Belfast. At Christmas he got a headache, and felt very ill and unpleasantly hot at night—symptoms which he had rarely suffered from before. On the 1st of January he became very ill, and was placed under the care of Dr. James Cuming, of Belfast. No doubt poison had been taken into his system in Dublin. Dr. Cuming, writing to me relative to this case, says:—"He certainly used the milk, and he certainly had fever; but that he had typhoid I cannot say. If you think everything continued which is not typhus is typhoid, then the case is clear, but there was constipation throughout; there were no spots, and the temperature was altogether unlike the typical remittent course of typhoid."

Case III.—Mrs. W., of No. 38, Elgin-road, has kindly furnished me with the following information:—"Our household was supplied with milk for six or nine months, ending about Feb. 1st, from * * * Eliza Armstrong had been in my service about six weeks, when she took to her bed on Christmas Day. She was suffering all the time I knew her from severe bronchial cold, and said she had been subject to a cough for three years. Her appetite was not good, and I ordered her a glass of milk daily with her dinner. She took this for some time, until one day she told me 'her stomach turned against the milk,' adding she thought the cook must have put it into a dirty glass. I thought it might have been fancy, and took no further notice of her remark at the time. This was, of course, previous to her illness. I had myself a bad attack of sickness and diarrhœa at the same time, and thought I had taken it from the servant, having been many times a day into her sick room. Dr. Chapman attended me at the time for it. The milk I took was always cooked. I have no reason for wishing this information to be kept private." This girl was admitted into the Meath Hospital upon the 4th of January, and upon what was believed to be the thirteenth day of a severe attack of typhoid fever. She died upon the 25th day of January. Dr. John William Moore informs me that there was constipation throughout the illness, which terminated in catarrhal pneumonia.

Case IV.—On the 3rd of January a girl was admitted into Mercer's Hospital. She had a severe attack of typhoid fever, but was discharged well on the 5th of February. She had been a kitchen-maid in a house on Elgin-road, and had been using milk from X.'s dairy. From a letter which I received from the girl's mistress I learned that the lady was of opinion that the fever had not commenced in her house, as it was merely a cold which the girl had when she left her situation to go home. Dr. Duffey, however, kindly inquired into this case, and is of opinion that she must have been ill with typhoid fever two or three weeks before her admission into hospital. The chest symptoms, which were mistaken for a mere cold, were, of course, very ordinary features of the malady. I have not the slightest doubt but that this girl got fever from drinking the infected milk. It is worth noting that in September another girl got fever in the same house on Elgin-road, and died.

Case V.—A servant girl was admitted into Sir Patrick Dun's Hospital from the house, 24, Elgin-road, on the 2nd of January. She was treated in hospital for typhoid fever. She had been in the habit of drinking the milk from X.'s dairy.

Case VI.—A lady who used the milk got a low, feverish attack at Christmas. She was confined to bed only for a few days, and it is doubtful whether or not the milk from X.'s dairy was the cause of her illness. The case is, however, worth noting.

CASES IN WHICH THE MILK CAUSED NO ILLNESS.

In six houses where the milk from X.'s dairy was used no fever appeared during December or January.

First house.—In this house the milk "was only used in tea; very seldom in cooking." There were no children in the house.

Second house.—Here the milk was taken cooked and uncooked by four or five persons, none of whom were young children. "Most of those who took the uncooked milk had gone through typhoid fever four and a half years ago." These previous attacks may account for their escape.

Third house.—The milk was used both cooked and uncooked by the family, but there were no children in the house.

Fourth house.—The whole family in this house drank the milk both raw and cooked, until it was known that fever was in the vendor's family—that was in the latter part of January.

Fifth house.—No one was ill in this house in December or January, though it was supplied with milk from X.'s dairy. In October, however, a housemaid died from typhoid fever in this house, and I shall have occasion further on to refer to the case.

"There were two children in the house, aged fourteen and twelve, but they did not drink the milk by itself. The servants being English, they did not, I fancy, drink the milk at all, except with tea." This is the information given to me by the head of the family.

Sixth house.—I could get no answer to my inquiries addressed to the head of this house, and as it was the only one on either Elgin or Raglan-road of whose milk supply I was ignorant, I gave X. the credit of supplying it with that article.

RAGLAN-ROAD CASES.

32 of the 34 houses on Raglan-road were occupied last December; 9 of these were supplied by Mr. X. with milk, and 23 were furnished with milk from 13 other vendors. No cases of fever of any kind occurred in any houses on this road, with four exceptions. In these four houses fever appeared about Christmas, and to each of them milk was supplied from X.'s dairy.

Case I.—A young lady became very ill about New-year's Day. She was in the habit of drinking the milk supplied to the house both cooked and uncooked, especially in the latter state. Dr. Robert M'Donnell, F.R.S., who attended her, states that "she had no spots, nor diarrhœa. She had, for an unusual length of time, high temperature and very rapid pulse, and acute bronchitis." This young lady was confined to her bed for nearly two months. A servant in the same house, who also drank the milk, got what I am informed was considered to be typhoid fever. Dr. M'Donnell did not see her, and I believe she was sent into hospital.

Case II.—Several of the family residing in No. 5, Raglan-road became ill at Christmas; four children, and young persons, and a female servant, were affected. All drank the milk. Dr. James Little saw some of the patients, and he informs me that they had so-called gastric fever, but not severely. The servant, however, was pronounced to have unmistakable typhoid, and one of the children was seriously ill for several weeks. There was no diarrhœa in these cases.

Case III.—The family of Mr. C., residing at No. 37, were invaded with typhoid fever at the end of December. A little girl and four adult servants became ill. All drank the milk uncooked—the little girl largely. One of the servants went home, and the others were admitted into Baggot-street Hospital at the following dates:—Mrs. O'B. on December 23, Mrs. J. on December 26, William J. on December 28. Dr. J. Hawtrey Benson informs me that these cases were typhoid; that there was absolutely no diarrhœa in any of them, but that, on the

contrary, the bowels of the patients had to be relieved by enema or purgative. Mr. C. informed me that the child was exceedingly ill for several weeks, and that at one time her recovery was very doubtful. There was no diarrhœa in her case.

Case IV.—The family living in No. 7 used the milk. Mrs. C. took it in tea, and at second course, but there is now no evidence to show whether or not she drank it raw. A little boy took it uncooked. On the 23rd December the family left Dublin and went to a house in the county of Meath. On that day the boy did not, his father informed me, feel well. His mother became ill on the 28th December, exactly a week after she had left Dublin. Clearly she had taken the poison into her system in Dublin. Both patients died in January, 1879.

Dr. Ringwood, of Kells, has, with the sanction of the lady's husband, been good enough to furnish me with a detailed accouut of the symptoms in these cases, and from this account the following are passages:—

"In every case there was profound blood-poisoning, giving rise to symptoms differing in each case from any standard disease. We had the perspirations, rash, sore throat, foul dejections of septicæmia. In Mrs. C.'s case, low erysipelas of foot, with sloughing of integument over metatarsal bones; low pyæmic pneumonia, lobular; desquamatory, greasy skin; sunk eyeballs; clammy strawberry tongue, with the purple congestion of under-surface, and green duckweed slime of upper part; papilla congested, enlarged, prominent; urine loaded with albumen and casts—in last stage pus and blood; no diarrhœa; hepatic phlebitis. Temperature normal in the morning; high at night—103° to 104°.

"In boy's case, localised peritonitis; no spontaneous diarrhœa; high fever; brain congestion; large abscess in mastoid cells.

"I had not the slightest doubt that Mrs. C. and her child had some latent blood-poison in their systems when they reached L.—spurious scarlatina, or some typhoid poison, changed in some way or other, so as to give rise to all the symptoms of scarlatina and pyæmia combined.

"Your researches in the case have cleared up the whole matter: the poisoned milk conveyed this poison, without the slightest doubt. I know that cases of scarlet fever have been set down to the escape of gases from slaughter-yards and dairies. These cases, I think, we may now look on as a new form of poisoning, in which the kidneys and skin, acting as eliminators, suffer in the same way as in scarlatina, the great tendency being towards pyæmic clots and abscess in mastoid cells and liver."

Unfortunately for Mrs. C. and her son, the country-house to which they went was in a very unsanitary condition; and, as Dr. Ringwood states, sewage gas making way into the house was the "fatal climax."

HOUSES IN WHICH THE MILK CAUSED NO DISEASE.

In five households on Raglan-road supplied with milk from X.'s dairy, no case of fever occurred about Christmas.

First household.—The family in No. 27 used the milk largely and uncooked. In December and January no sickness visited the household. Mr. H., however, informs me that his "son took ill of gastric on the 10th February, 1879, and was confined to the house for about a fortnight." As the dairy was not put into a proper sanitary state until the beginning of February, I can hardly avoid regarding Mr. H., junior, as the last of the cases caused by the milk. I have not, however, included him in the 67 cases.

Second household.—The family used the milk in tea and puddings, &c.

Third household.—The milk was used in tea and in custards, &c.

Fourth household.—The milk was not used by any of the family, or the servants, except in tea, and there were no young persons in the house.

Fifth household.—The milk was drank only in tea or cooked by the family in this household.

FITZWILLIAM-SQUARE CASES.

There are 69 houses in Fitzwilliam-square, and in December last 7 of them were uninhabited. Of the 62 inhabited houses, 4 were supplied with milk by Mr. X., 50 with milk from 15 different dairy-owners, and 3 from cows kept on the premises. One gentleman declined to state where his milk was obtained from, as by so doing "great injury might be done to innocent traders!" I learned through other sources that no fever had occurred in this household in December or January last. I was not able to ascertain the names of the persons who supplied milk to 4 houses. I made inquiries amongst the persons residing near these houses and amongst the medical men of the district, but no one had heard of the occurrence of illness in any one of them.

Case I.—A child and two servants became ill early in January. Mr. William Colles, Surgeon to Her Majesty in Ireland, attended the child. There was a high temperature, but no diarrhœa or rash. The fever

lasted about a month. Mr. Colles saw only one of the servants—a man—and but upon one occasion. He had a rash upon him, which was neither that of typhus nor smallpox. He had no diarrhœa. He went into Sir Patrick Dun's Hospital, where he was treated for typhoid. The other servant was a female; she was, I am informed, very ill with fever, but I have not obtained any definite information concerning the symptoms of her attack. I am informed that all these persons drank the milk.

Case II.—Three children were attended by Dr. William Moore, King's Professor of Medicine. A housemaid in the same house had fever, and was admitted into hospital. Professor Moore informs me that all four had undoubted typhoid fever. The father of the children informed me that they drank the milk uncooked daily, and that two other children who only used the milk in tea had no sickness. The illness in this household occurred shortly after Christmas. Dr. Moore paid his first visit on the 5th of January.

Case III.—In this household two cases occurred at the end of December. The patients were a young lady and a man-servant. Dr. Robert M'Donnell, F.R.S., attended the former. She "had no spots; she had repeated bleedings from the nose, and some diarrhœa." The young lady used the milk uncooked. The man was admitted into Baggot-street Hospital, where he died upon the 10th day of January. He had neither diarrhœa nor rash; but his disease was pronounced to be typhoid.

Case IV.—In this household a housemaid contracted fever, and was admitted into Sir Patrick Dun's Hospital early in January. I could not learn any particulars relative to her symptoms, but her case was described in the hospital books as typhoid. I have ascertained that she had used the milk raw.

UPPER MOUNT-STREET CASES.

In three households in Upper Mount-street supplied from Mr. X.'s dairy, fever broke out in December.

Case I.—On the 28th of December a kitchen-maid was admitted from a house in Upper Mount-street into the epidemic ward of the Meath Hospital. She stated, on being asked, that she had habitually drank the milk supplied by Mr. X. There were no children in this house. In this case Dr. John William Moore informs me that the "tendency to constipation was well marked." She had a severe consecutive attack of otitis, followed by bubo and abscess in the parotid and mastoid regions on the left side.

Case II.—Dr. M'Clintock attended a family who had been using the milk from X.'s dairy. "Six cases of typhoid occurred, four being

adults. The children only had diarrhœa. The cases extended from the 18th December to the 10th January." There were eight persons residing in this house and all drank the milk. Mr. M., two children, and three female servants, took it uncooked, Mr. M. using it with soda-water. All got typhoid. Mrs. M. was not ill, but she told Dr. M'Clintock that she made it a point never to drink milk without boiling it. The eighth person was the butler, who stated that he rarely tasted the milk except in tea.

Case III.—The family used the milk raw and cooked. Two adults did not suffer any illness. Three children had fever; they had "great weakness, furred tongue, inability to take food, and a high pulse. There was no diarrhœa." The first case occurred early in December—the last early in January. The children were attended by Dr. Denham.

LOWER MOUNT-STREET CASES.

Case I.—Dr. Walter G. Smith was called in to see a little girl in a house in Lower Mount-street. He pronounced her case to be one of typhoid. He found that two women-servants in the house were also ill—one with unmistakable typhoid, the other with a gastric attack of the typhoidal character. The child had a long illness, and her convalescence was slow. The illness in this house commenced about the third week in December. One of the servants was admitted into Sir Patrick Dun's Hospital, where she remained for three weeks. In none of these cases was there diarrhœa. All the patients had been in the habit of drinking the milk raw; this information was given to me by the lady who presided over the household.

Case II.—On the opposite side of the street a little boy who had been using the milk in question was attacked about Christmas with typhoid, and was ill for some weeks. He had both diarrhœa and rash. He was attended by Dr. Richardson.

THE UPPER BAGGOT-STREET CASES.

So far as I can learn X. supplied only three households in Upper Baggot-street.

First household.—This is an institution, and the inmates—all adults—only used the milk in tea. None of them had fever.

Second household.—There were no children in this household. Two adults drank the milk uncooked; the rest of the family used it only in tea. One of the milk-drinkers had typhoid some years previously, and was not therefore a likely subject for a fresh attack. The other, Mr. Lyne, a student of medicine of Trinity College (he kindly permits me to refer to him by name), became ill upon the

18th December. He had for some time previously been using the milk, especially at dinner, at which meal he drank no other liquid. He had great prostration and a high temperature, but neither diarrhœa nor rash. He continued drinking the milk for a long time after his illness began, and did not become better until he gave up using it. He began to convalesce about the beginning of February. His attack was a very severe and prolonged one.

Third household.—The family of Mr. D. were good customers of Mr. X.'s dairy. They used large quantities of milk. Mrs. D. said to me that she and one of her children almost subsisted upon it, and all the family used it largely, chiefly raw. Early in December one member of the family became very ill, and was for some days treated for gastric fever, which, however, ran into tubercular meningitis, from which disease Dr. George Kidd informs me the child died on the 15th December. In cases of tubercular meningitis the earlier symptoms would be similar to those of so-called simple gastric fever. This child was undoubtedly treated for the latter disease, and I have but little doubt, from the history of the illness of the other members of the family, and from the poisonous character of the milk which the child used so largely, that her illness was in part at least due to the milk. It ended in tubercular meningitis, probably because the child's diathesis was a scrofulous one, as I have reason to believe was really the case. Mrs. D. was very ill from the middle of December until the middle of January, when she gave up the use of the infected milk owing to a temporary change of abode. She had constant sick stomach, and severe and continued diarrhœa. Two of her children beside the one who died were ill with gastric fever, and one of them is still not quite restored to health. Mr. D. was very ill with a feverish attack at Christmas, and got severe abscesses in his legs, which were healed with difficulty. A female servant (who also used the milk raw) was ill for six weeks, though she did not give up her situation. Mrs. D. informs me that this girl had severe gastric symptoms, and that she could barely "keep on her feet." The sewerage arrangements in this house were found to be very defective, but they had been so for an unknown period previous to the December outbreak of sickness in the household. I may add that Dr. Kidd questioned Mrs. D. as to the nature of the milk used by the family, and suggested that as they were all drinking milk and were all ill, there might be something wrong with the article. The family now attribute all their illness to the use of the milk.

WATERLOO-PLACE CASE.

A girl was admitted into Baggot-street Hospital on the 28th January, 1879. She had been a house- and parlour-maid in a house in Waterloo-place, Upper Leeson-street. On the 17th January she felt so ill that she was obliged to leave her situation; and she stated that she had felt unwell for some weeks previously. Clearly her illness dates from Christmas. Dr. Benson states that she had enteric fever, and that there was no diarrhœa, but rather a tendency to constipation, in the case.

I have every reason to believe that no other house in Waterloo-place was supplied with milk from Mr. X.'s dairy save that in which this girl lived as housemaid. She stated that she drank the milk. There were no children in the house.

BURLINGTON-ROAD CASE.

A lady and her child residing on Burlington-road were attended for typhoid fever by Professor William Moore. They became ill during the last week of December, and had each a severe attack. In the mother's case there were both eruption and diarrhœa; in the child's, bronchitis and diarrhœa. The lady's husband informed me that both his wife and child used, uncooked and as a staple food, the milk supplied from Mr. X.'s dairy. The child was under eighteen months of age—a period of life not very liable to attacks of undoubted typhoid. He lived in an airy nursery at the top of the house, and remote from sewers and water-closets. The sanitary appliances in the house were overhauled, but no defects were found to exist.

NORTHUMBERLAND-ROAD CASES.

Case I.—On the 7th January, 1879, Professor Moore was called in to see a young lady who resided with her aunt on Northumberland-road. She had been ill for a week previously, and her case was pronounced to be typhoid. There was no persistent diarrhœa. A servant girl in the house was also found to be affected with typhoid; she had no diarrhœa. The young lady's aunt informed me that both the patients drank, uncooked, the milk supplied from Mr. X.'s dairy, and that the young lady used it as a substantial article of diet.

Case II.—Doctor Arthur V. Macan attended, during an attack of typhoid, two children, a boy and a girl, aged ten and seven years respectively. They resided in a house on Northumberland-road supplied with milk by Mr. X. The first case occurred on the 2nd December, and the

second upon the 7th of the same month. There were two other children in the house, who were promptly removed from it, and did not contract the malady.

These cases occurred so early in December that it is doubtful whether or not they can be properly included in the group of cases which may be termed the Christmas epidemic. I have already stated that I strongly suspect that the illness of one of X.'s children began in November; and if my surmise be correct it is likely that the milk may have first become infected late in November.

ST. MARY'S ROAD CASE.

St. Mary's road is off Northumberland-road, and consists of only eighteen houses, all newly built, and in an excellent sanitary condition. I have ascertained the source of milk supply in only eleven of these houses, and find that X. supplied only one of these eleven households. In this household three children became ill in the last week of November and beginning of December. I am informed by the father of these children that X. supplied the house with milk for "a few days prior to the sickness," and for about two months afterwards. He says that the illness "would be more correctly termed gastric than typhoid." The mother of the children became ill with gastric fever in December. In these cases there was no eruption, but two of the children "had considerable diarrhœa, and one of them lost her hair in combfuls," for which her head was shaved three times as a remedy. The illness in this family lasted for seven weeks, and the patients were attended by Dr. Harley.

MARK-STREET CASE.

A man, aged twenty-one, was admitted from 13, Mark-street, into Cork-street Fever Hospital upon the 4th of January. He had well-marked and severe typhoid. He stated, as Dr. John William Moore informs me, that he had been in the habit of drinking milk from X.'s dairy. I made careful inquiries as to the existence of typhoid fever in Mark-street, but could not discover that any other case had occurred in it for some months previous.

CASES CLOSE TO X.'S DAIRY.

Mr. X. does not keep a shop, and I presume the sales of milk in his house are unimportant. Almost next door to him there is a small

dairy, which I learn does a brisk local business. It is probable that the people in the court chiefly get their milk from the latter establishment. A woman who stated that she was in the habit of getting milk from X.'s dairy became very unwell about Christmas. Some person wrote an anonymous letter to me calling attention to this woman, and asserting that she had been laid up with typhoid fever for more than a month, and had got no medical advice. I asked my colleague, Dr. Mapother, to visit her, and he found her suffering from bronchitis; this visit was, however, paid in February, and on personally inquiring into the case I find that the woman had no cough for the first fortnight of her illness, but simply a feverish attack which closely resembled some of the cases I have already described. I have no doubt but that her illness was as likely to have been caused by the milk as was that of any of the other cases which I have referred to. In the court, however, another and unmistakable case of typhoid fever occurred. It was that of a young woman who sickened early in January, and was attended by Dr. Byrne, of Upper Baggot-street. There was no diarrhœa in this case, but the throat and chest symptoms were severe, and the typhoidal character of the attack was, Dr. Byrne states, unmistakable. The patient had been in the habit of drinking the milk from X.'s dairy, and did not convalesce until she gave up its use. Dr. Byrne saw another case of typhoid close to X.'s dairy. It terminated fatally. From inquiries which I have made I feel satisfied that the patient (a man) had used the milk. The information obtained from the dispensary physicians and the local practitioners as to the existence of other cases of typhoid in the neighbourhood of X.'s dairy during the latter part of 1878 was in the negative.

WAS THE MILK FROM X.'S DAIRY REALLY THE INFECTING MEDIUM ?

I have now shown that at 30 distinct points at which the milk from X.'s dairy was distributed, sickness appeared in December and the early part of January, and that 67 persons were affected. Now, the total number of points at which the milk, so far as I have been able to learn, was distributed, was 42; therefore, illness appeared at 71 per cent. of these points.

As already stated, the milk supply of three places was fully inquired into—namely, Raglan-road, Elgin-road, and Fitzwilliam-square. The total number of occupied houses in these places last

December was 125. I was unable to ascertain any particulars pertinent to the subject of this paper in the cases of 5[a] of these houses, except, as I have already stated, that about Christmas there was no fever in any of them. Concerning the 120 houses of which I have procured exact information, the following are the statistical details:—Mr. X. supplied 25 of them with milk, and 25 other vendors furnished milk to 91 of them; in 4 of them cows were kept by the families. In 14 of the 25 households supplied by X. fever attacked no fewer than 31 persons within the space of one fortnight—most of them within one week. In the 95 households supplied with milk from other sources, not a single case of fever or serious illness of any kind occurred during December or January. Applying the theory of probabilities to this case, it seems in the highest degree improbable that, by a mere set of coincidences, the milk from X.'s dairy should happen to be that supplied to every one of the 14 houses out of the 120 in which fever occurred. Even if we had no evidence at all with respect to the existence of fever at his dairy, we could not avoid coming to the conclusion that the milk sent out from it was in some way concerned in the introduction of fever into these 14 houses. It may be asked—Why did not every one who drank the milk sicken? The zymotic poisons are not like arsenic or strychnine—they are not so certain in their action. Water known to have given typhoid or Asiatic cholera to some persons, has been drank with impunity by others. Some persons cannot be vaccinated. Perhaps, too, the milk may have had infected matter in it on two or three occasions only.

MATHEMATICAL PROOF THAT THE MILK FROM X.'S DAIRY CAUSED THE EPIDEMIC.

I have stated that X. supplied milk to 25 out of the 120 houses composing Fitzwilliam-square and Raglan and Elgin roads. There is no evidence to prove that X.'s 25 houses differed in any respect other than in the sources of the milk supply from the other 95 houses supplied from 25 other dairies. Fourteen of the houses were invaded by fever within a period of about ten days. Now, if only 1 case of fever were to occur in a group of 120 houses, the chances that it would appear in 1 of 25 selected houses would be only as 25:95; but the probability of the conjoint occurrence of

[a] Exclusive of one on Elgin-road, which I have assumed X. supplied.

any number of independent events is the product of the several probabilities. That is—

The probability of one case $= \frac{25}{120}$ (1)

,, ,, a second case $= \frac{24}{119}$ (2)

,, ,, two cases, $\frac{25 \times 24}{120 \times 119}$ = products (1) (2)

,, ,, three ,, $= \frac{25 \times 24 \times 23}{120 \times 119 \times 118}$

The probability that the second should occur is $\frac{24}{119}$; that is, after account has been taken that the probability of the first is $\frac{25}{120}$; therefore that the two should occur is—

$$\frac{25 \times 24}{120 \times 119} \cdot \frac{25}{120} = \frac{1}{4\frac{4}{5}} \cdot \frac{24}{119} = \frac{1}{4\frac{23}{24}}$$

$$\frac{25 \times 24}{120 \times 119} = \frac{600}{14280} = \frac{1}{23\frac{4}{5}}$$

The probability of one event is $1 : 4\frac{4}{5}$.

The probability of *both* events, $1 : 23\frac{4}{5}$.

It will, therefore, be seen that as soon as the product of the probabilities of the separate events has to be taken that the probability decreases in a multiple ratio, as illustrated by the case already stated in which the probability of the event occurring once is only $1 : 4\frac{4}{5}$; but the probability of its occurring *twice* (not a *second* time) is $1 : 23\frac{4}{5}$.

The statement for finding the probability of 14 cases occurring in X.'s 25 houses is therefore:—

$$\frac{25 \times 24 \times 23 \times 22 \times 21 \times 20 \times 19 \times 18 \times 17 \times 16 \times 15 \times 14 \times 13 \times 12}{120 \times 119 \times 118 \times 117 \times 116 \times 115 \times 114 \times 113 \times 112 \times 111 \times 110 \times 109 \times 108 \times 107}$$

which, when cancelled, gives—

$$\frac{5}{59 \times 29 \times 113 \times 37 \times 109 \times 9 \times 107} = \frac{5}{750,901,483,197}$$

which, when reduced, gives—

$$\frac{1}{150,180,296,639}$$

That is, the probability of fever occurring 14 times the same way, when the probability that it would occur once in that way is $\frac{25}{120}$, is as 1 chance in 150,180,296,639 chances.

The chances that the 14 cases would occur in X's houses might also be considered under the head of the mathematical theory of "Combination," and in which the result would be arrived at by estimating the number of combinations of 14 cases that could occur in 25 houses compared with the number of combinations of 14 cases that could occur in 120 houses. Without working this out it is evident to the mathematician that it would produce almost as great numbers as the method which I have used.

CHARACTERISTICS OF THE EPIDEMIC.

I have stated that only a few of the 67 persons whose illness I have endeavoured to account for had either diarrhœa or rash. Dr. Benson remarks with reference to the five cases treated in his hospital, to which I have already referred:—"Diarrhœa was not a conspicuous symptom in any of the cases I have treated either in public or private for some months past; but its complete absence in the five cases I name suggests placing them in a separate group." It will be conceded that in a very large majority of typhoid cases there is diarrhœa. Dr. James Little informs me that in about 90 per cent. of the cases which he has seen there was diarrhœa. Now, Dr. Chapman, from his private practice and his experience as a medical officer in Pembroke Township, is in a position to give evidence as to the general character of typhoid fever in that district for some months past. He has kindly given me an account of his cases, of which the following is a summary:—He saw from the 10th October, 1878, to the 20th March, 1879, 27 cases. Of these 16 had rash and diarrhœa, and 7 had diarrhœa but no rash. Dr. Harley, who enjoys a large practice in the township, also assures me that in the great majority of his cases of typhoid there was diarrhœa. I have received the same assurance from Dr. Powell, who also has a large local practice. Mr. X. and his two children had no diarrhœa, though the latter had spots; and it is worth recording—though, perhaps, nothing but a mere coincidence—that the cases of fever which apparently were caused by the use of the milk sent out from this dairy should also, with few exceptions, have been non-diarrhœal.

There is little doubt but that if the dairy was really a focus of infection, the *materies morbi* which caused the outbreak now being discussed came from X.'s daughter. He did not get typhoid himself until many of his customers were laid up with the disease. I have long been a believer in the theory that there is a specific

virus of typhoid, and that an attack of the disease is always a result of an antecedent one. But I have also long been of opinion that there are many fevers of unascertained origin, and that perhaps some of them are sporadic. Some of these fevers simulate one or more of the characters of typhoid. Some years ago about thirty boys in a large school became suddenly ill. They had furred tongue and a high temperature, and a few of them had diarrhœa. Most of them recovered perfectly within one week, and all within a fortnight. I found that the water used in the school was highly polluted with sewage; and the report of an architect who examined the drains stated that a rat-hole of very recent formation had established a direct communication between a sewer and the well which furnished water to the school. In this case it is probable that the exciting cause of the outbreak was simply a large amount of decomposing animal matter in the water. The history of the spread of typhoid by infected milk from X.'s dairy, and some cases in which potable water was the vehicle of typhoid poison, lead me to the conclusion that the infective matter thrown off from the body of a typhoid patient suffering from diarrhœa, and covered with the characteristic rash of the disease, may, when taken into the body of another person, give rise to simple fever without either diarrhœa or spots. Conversely, the infective matter from a patient suffering from apparently simple fever may give rise in other subjects to typhoid, in which all the most characteristic symptoms of the disease may appear. In several limited and purely local outbreaks of typhoid fever which have come under my notice, and each of which was traced to the use of contaminated water, the symptoms varied in individual cases—many having apparently a mere feverish cold, others sore throat, sick stomach, or diarrhœa, &c., whilst some were struck down with the most malignant typhoid. About four years ago a person feeling unwell paid a visit to a relative who resided at Clontarf. In a day or two it was found that he had typhoid fever, and diarrhœa and rash made their appearance. In about a week three persons residing in the house became ill. One had a slight attack of fever; a second had severe diarrhœa, but nothing more; whilst the illness of the third developed into the worst form of typhoid. It was found that the soil-pipe of the water-closet leaked, and that its contents escaped into the well which supplied water to the house. In this case it is evident that the three persons differently affected were all infected by an identical virus.

I believe that Mr. X.'s daughter suffered from true typhoid, though she had neither diarrhœa nor rash. The poison generated in her body was therefore capable of originating typhoid of any kind when introduced into the bodies of other persons. It is, however, conceivable that the non-diarrhœal character of the girl's illness may have had some influence in determining the non-diarrhœal character of the whole outbreak. I give the suggestion for what it is worth. Here I may remark that it was urged as an objection to the theory that fever was spread from the dairy that the patients there had no diarrhœa; but that would not prevent their dejections, such as they were, from being infective.

It is evident that the infective matter in the milk must have been very minute in quantity, which leads one to conclude that it was not mere filth but a specific virus which caused the outbreak of fever.

A SMALL TYPHOID OUTBREAK IN OCTOBER.

In October, 1878, there were three cases of typhoid fever in Raglan and Elgin roads, and it is remarkable that they all occurred in houses supplied from X.'s dairy. One case was that of a servant girl who, after six weeks' residence in the house from which a girl was subsequently admitted into Mercer's Hospital, was received into Baggot-street Hospital, and died there of typhoid. Her mistress states that she was ill at the time she entered the house at Elgin-road; but she was able, it appears, to perform her work there for six weeks after her arrival. In another house on Elgin-road, already referred to as the "fifth house," a housemaid died from typhoid fever on the 10th November. She was attended by Dr. H. P. Nolan.

In the house No. 7, Raglan-road, to which I have already referred, a case of typhoid occurred about October last.

These cases of typhoid are the only ones which occurred in these roads from July, 1878, till the outbreak at Christmas; and it is remarkable that they took place in houses supplied with X.'s milk. Professor Moore attended a young gentleman for typhoid fever in the latter part of October and beginning of November. He was a student in Trinity College, but spent much of his time in his mother's house on Northumberland-road, where subsequently Dr. Moore attended two persons in typhoid. Whilst at his mother's house he frequently drank milk from X.'s dairy, being fond of that liquid.

I have no information of any kind in reference to the state of X.'s dairy in October; but it is worth recording that about that time four houses supplied with milk from it had typhoid. These cases came incidentally to my knowledge; I might, if I had hunted up the matter, have discovered others.

SANITARY DEFECTS IN THE HOUSES.

Most of the houses in which typhoid occurred on Raglan and Elgin roads were examined on behalf of the Pembroke Township Urban Sanitary Authority by Dr. Chapman and Mr. Henderson, architect. In all save four serious sanitary defects were found; but Mr. Henderson agrees with me that in all probability an equal number of houses in any other place built about the same time would be found just as defective. In fact, many other houses on these roads in which no sickness had occurred were examined, and the sewerage arrangements found in a very bad condition.

CONCLUSION.

In concluding this paper I thankfully acknowledge having received valuable help in procuring information relative to the subject-matter of it from Professor Moore, Dr. Benson, Dr. J. W. Moore, Dr. Duffey, and Dr. Chapman. Information asked for was also kindly communicated to me by Professor Colles and Drs. Robert M'Donnell, M'Clintock, Harley, Kidd, W. G. Smith, Macan, Powell, Byrne, and Nolan.

ART. II.—*Medical Report of the Fever Hospital and House of Recovery, Cork-street, Dublin, for the Year ending 31st of March, 1879.* By JOHN WILLIAM MOORE, M.D., M.Ch., Univ. Dubl.; Fellow and Ex-Censor of the King and Queen's College of Physicians; Physician to the Hospital and to the Meath Hospital and County Dublin Infirmary; Lecturer on Practice of Medicine in the Carmichael College of Medicine and Surgery, Dublin; Examiner in Materia Medica in the Queen's University in Ireland; Ex-Scholar of Trinity College, Dublin.

THE compilation of the Annual Medical Report of Cork-street Hospital and House of Recovery is on this occasion at once a mournful duty and no easy task.

At any time it is sad to have to chronicle the history of a

destructive epidemic; but the year ending March 31, 1879, is especially memorable in the Hospital annals as having been one of great sickliness and mortality. On more than one occasion the resources of the Institution were taxed to the utmost by the influx of sufferers with smallpox, measles, and scarlatina, and it is not going too far to say that the efficient administrative machinery at the disposal of the Managing Committee alone enabled the Hospital to bear the strain.

Nor is it easy so to write the medical history of the past year that the record may form a fitting sequel to the elaborate and invaluable reports written in former years by my colleague, Dr. Thomas W. Grimshaw, the Consulting Physician to the Hospital. Indeed, I had almost shrunk from the task, had it not been for the assistance so generously given me by Dr. G. Purcell Atkins, who has compiled, with his wonted skill and accuracy, the Tables on which this Report is based. With the view of rendering the present report comparable with those written by Dr. Grimshaw, and also because I consider that the system of statistics designed by him leaves nothing to be desired, I have elected to follow as closely as possible the lines of last year's Report in the following pages.

Table I.—*Showing the Yearly Statement of Patients.*

From 1st May, 1804, to 31st March, 1879, inclusive			202,997
Discharged cured, or relieved	188,076		
Died	14,846		
			202,922
Remaining in hospital 31st March, 1879			75
In hospital 31st March, 1878	135		
Admitted 1878-79	2,151		
			2,286
Discharged cured, or relieved	1,764		
Died	447		
			2,211
Remaining in hospital 31st March, 1879			75

The Yearly Statement of Patients in Table I. shows that the number of admissions to the Hospital was far in excess of the previous years—being 2,151, as compared with 936 in 1877–8, and 666 in 1876–7. This increase is principally due to the epidemic of smallpox, which raged throughout the year.

TABLE II.—*Showing the Monthly Statement of Patients from 1st April, 1878, to 31st March, 1879.*

Years	Months	Admitted	Daily Average No. of Patients in Hospital
1878	April -	222	150·40
	May -	219	151·80
	June -	223	131·10
	July -	220	129·35
	August -	126	97·83
	September -	97	70·00
	October -	106	58·30
	November -	113	56·40
	December -	200	89·45
1879	January -	381	187·51
	February -	133	160·57
	March -	111	93·32
	Total and Average	2,151	114·67

Table II. contains the Monthly Statement of Patients, from which it appears that the greatest number of patients admitted in one month was 381 in January, while the smallest number was 97 in September. The daily average number of patients in hospital, which had risen from 45 in 1876–77 to 47 in 1877–78, rose still further to 114·67 in 1878–9. In April, 1878, the daily average number of patients was 150·4; in May, 151·8; in January, 1879, 187·5; and in February, 160·6. On several days in January more than 200 patients were on the Hospital books. These figures demonstrate the close dependence of sickliness, and particularly of the prevalence of zymotic disease, on season.

Among the most remarkable haunts of disease during the year were the following houses:—13, Nicholas-street furnished 8 cases of smallpox; 7, Lower Mountpleasant-avenue, 6 cases of smallpox; 21, Wood-street, 6 cases of fever (1 of typhus and 5 of enteric); 6, Taylor's-lane, 3 cases of typhus and 1 of smallpox; 6, Love-lane, 4 cases of fever; 13, Love-lane, 4 cases of smallpox; 1, George's-court, 4 cases of smallpox and 2 cases of typhus; 3, George's-court, 6 cases of fever and 2 cases of smallpox; 8, Newmarket, 3 cases of fever and 1 case of smallpox; 48, Watling-street, 2 cases of typhus

and 2 of smallpox; 23, Thomas-court, 4 cases of smallpox and 1 case of fever; 12, Golden-lane, 3 cases of fever and 1 case of smallpox; 24, Golden-lane, 2 cases of fever and 2 of smallpox; 23, Chancery-lane, 2 cases of fever and 2 of smallpox.

Cases were admitted from the following public institutions:—

	Cases		Cases
Brown-street Orphanage,	18	Luke-street School, -	1
City of Dublin Hospital, -	2	Maison de Santé, - -	1
Ship-street Barracks, -	2	St. Joseph's Night Refuge,	13
Cork-street Hospital, -	13	Providence Home, -	1
Coombe School, - -	8	Steevens' Hospital, -	1
Convalescent Home, Stillorgan, - -	1	Sir Patrick Dun's Hospital,	1
Elliott Home, - -	8	St. Vincent's Hospital, -	6
High Park Convent, -	1	South Dublin Union, -	109
St. Joseph's Orphanage, -	2	North Dublin Union, -	2
Jervis-street Hospital, -	2	Westmoreland Lock Hospital, - - -	2

In Table III. will be found the number of cases of the principal diseases admitted to the wards during the past year, together with a statement of the mortality amongst those treated to a termination. In 44 instances no definite disease existed—a fact which might seem to indicate relaxness or inattention on the part of those responsible for the admission only of suitable cases. But many of the 44 cases of "No Disease" were the mothers of infants of tender age, admitted in measles and scarlatina during the month of January, 1879. It would have been impossible to admit the children without their mothers. Let us also weigh well the responsibility of refusing admission to any applicant at first sight, when the unwashed skin, the bloodshot eye of wakefulness or debauchery, the glazed tongue of hunger, or the haggard face of misery, may one and all simulate continued fever. If we do so we shall not hastily condemn the temporary admission of such cases to the well ventilated wards of the Fever Hospital, where the risk of contracting disease is reduced to a minimum. It is noteworthy that only *two* cases of alcoholism—an affection or condition which often closely simulates typhus—were admitted during the year.

TABLE III.—*Showing the Number of Admissions of the Principal Diseases, and the Mortality of the Cases treated to a Termination, for the year ending March 31st, 1879.*

	Typhus Fever	Enteric Fever	Relapsing Fever	Simple Fever	Intermittent Fever	Smallpox	Scarlatina	Measles	Pneumonia	Whooping Cough	Diarrhœa	Erysipelas	Meningitis
1878 April, -	11	5	—	13	1	175	1	6	3	—	—	—	—
May, -	7	2	—	16	—	178	3	2	1	—	—	1	1
June, -	14	7	—	18	—	167	1	1	1	—	—	—	1
July, -	15	6	—	19	—	168	2	—	3	1	—	1	—
August, -	14	5	—	13	1	86	—	1	1	—	1	—	—
September,	17	6	—	13	2	48	2	—	2	—	—	—	—
October, -	11	8	—	20	—	54	5	—	1	—	—	1	—
November,	15	6	—	6	—	76	4	1	—	—	—	—	—
December,	13	6	—	14	—	152	2	3	2	—	—	—	—
1879 January, -	9	2	—	21	—	237	42	18	1	—	1	—	1
February, -	9	4	—	11	—	94	4	—	1	—	—	1	—
March, -	7	3	—	9	—	74	5	3	—	—	—	—	1
Total, 1878–9, -	142	60	—	173	4	1509	71	35	16	1	2	4	4
Total, 1877–8, -	134	51	—	220	7	266	18	42	33	3	2	3	4
Increase this year,	8	9	—	—	—	1243	53	—	—	—	—	1	—
Decrease this year,	—	—	—	47	3	—	—	7	17	2	—	—	—
Died, - -	25	5	—	—	—	357	22	9	2	—	1	—	2
Mortality per cent.	17·6	8·3	—	—	—	23·6	31·0	25·7	12·5	—	50·0	—	50·0

Bronchitis, 47 ; rheumatism, 12 ; catarrh, 7 ; congestion of lungs, 4 ; tonsillitis, 2 ; alcoholism, 2 ; purpura, 2 ; colic, 2; phthisis, quinsy, premature birth, rupia, cynanche, hepatitis, lumbago, convulsions, 1 each ; no disease, 44.

COMPARATIVE STATEMENT AS TO THE PREVALENCE OF DISEASE.

Among the continued fevers, typhus and enteric, or typhoid, show a slight increase; but there is a material decrease in the number of cases of simple fever, or febricula, as compared with the year 1877–78. No case of relapsing fever came under observation. Smallpox unhappily increased to an appalling extent—the number of cases admitted (1,509) being 1,243 more than in the previous year (266). Scarlatina *apparently* shows a considerable increase; but this is largely accounted for by the fact that in January, 1879, the victims of a mixed epidemic of scarlatina and measles were removed to the Hospital from the South Dublin Union Workhouse. Of the 71 cases of scarlatina treated in the year no fewer than 42 were admitted in January. As regards measles, if we exclude the cases admitted from the South Dublin Union Workhouse, in January, the disease exhibits a decided decrease. Pneumonia also diminished more than one-half, as compared with 1877–78. Whooping-cough, diarrhœa, erysipelas, and meningitis show but little change, and none of these affections discovered an epidemic tendency. Some cases of Rötheln, or so-called German measles, came under observation in the wards.

RATE OF MORTALITY.

The deaths during the year amounted to no less than 447, so that the general rate of mortality was 20·78 per cent., compared with 9·49 per cent. in the preceding year. This sad increase in the death-rate was chiefly attributable to the malignancy and fatality of the epidemic of smallpox, the brunt of which appears to have fallen on this Hospital. Exclusive of smallpox, an analysis of cases sent into Hospital when beyond the hope of recovery is given in Table IV.

In addition to the hopeless cases included in Table IV., twenty cases of smallpox terminated fatally within 48 hours from the time of their admission. If we deduct these 38 cases from the number of deaths, the mortality is reduced from 20·78 to 19·01 per cent.—a figure which is, no doubt, still very high.

TABLE IV.—*Analysis of Deaths*, 1878–9, *of Cases, exclusive of Smallpox, sent in when beyond Recovery.*

No.	No. in Registry	Days Sick before Admission	Duration in Hospital	Disease	Note
1	47	14	1 day	Typhus	Sent in very bad
2	62	4	1 day	Bronchitis	Sent in dying
3	417	21	1 day	Pneumonia	Sent in very bad
4	557	—	1 day	Premature Birth	
5	613	14	2 days	Bronchitis	Sent in very bad
6	1142	7	1 day	Scarlatina	
7	1253	7	8 hours	Typhus	Sent in very bad
8	1485	8	6 hours	Bronchitis	Sent in dying
9	1504	7	2 days	Bronchitis	Sent in very bad
10	1610	3	2 days	Measles	
11	1626	3	3 hours	Measles	
12	1669	7	1 day	Measles	
13	1673	7	2 days	Measles	
14	1696	7	2 days	Scarlatina	
15	1802	3	2 days	Scarlatina	
16	1916	8	5 min.	Bronchitis	Died on being brought into the ward
17	1992	14	6 hours	Bronchitis	
18	2144	3	1 day	Typhus	Gangrene of fingers

CAUSES OF DEATH.

Table V. presents a complete analysis of the causes of death. From this analysis it appears that smallpox was by far the most fatal disease during the year. No fewer than 357 out of the 447 deaths which took place were caused by it—that is to say, smallpox is to be credited with as nearly as possible 80 per cent. (79·9) of the total mortality. Of the other diseases typhus fever and scarlatina were the most destructive to life—25 deaths, or 5·6 per cent. being attributed to the former, and 22 deaths, or 4·9 per cent., to the latter disease. Bronchitis proved fatal in 15 instances, thus

accounting for 3·4 per cent. of the total mortality. The four deaths referred to "congestion of the lungs," in January, were of children admitted from the South Dublin Union Workhouse, and presumably suffering from scarlatina or measles, but in whom no rash was observed.

Table V.—*Showing the Deaths in each month, and the Diseases which caused them, during* 1878-79.

1878-9	Typhus Fever	Enteric Fever	Smallpox	Pneumonia	Bronchitis	Scarlatina	Measles	Phthisis	Meningitis	Purpura	Premature Birth	Diarrhœa	Congestion of Lungs	Rheumatism	Total
April, - -	2	—	37	1	2	—	—	1	—	—	—	—	—	—	43
May, - -	1	—	34	1	2	—	—	1	—	—	—	—	—	—	39
June, - -	3	—	28	—	1	—	—	—	1	1	1	—	—	—	35
July, - -	5	—	32	—	1	—	—	—	—	—	—	—	—	—	38
August, -	1	—	24	—	—	—	—	—	—	—	—	—	—	—	25
September, -	1	1	14	—	—	—	—	—	—	—	—	—	—	—	16
October, -	—	1	13	—	—	2	—	—	—	—	—	—	—	—	16
November, -	3	—	17	—	—	—	—	—	—	—	—	—	—	—	20
December, -	4	—	35	—	1	—	—	—	—	—	—	—	—	—	40
January, -	1	2	60	—	5	12	9	—	1	—	—	1	4	1	96
February, -	2	1	38	—	3	7	—	—	—	—	—	—	—	—	51
March, - -	2	—	25	—	—	1	—	—	—	—	—	—	—	—	28
Total, - -	25	5	357	2	15	22	9	2	2	1	1	1	4	1	447

METEOROLOGY.

The Meteorological Tables (VI., VII., VIII., and IX.) have been drawn up with a twofold object—first, to enable the reader to institute a comparison between the conditions of weather during the past hospital year and the prevalence of disease in the same period; secondly, to afford a standard of reference to the principal meteorological factors in a long series of years.

1878.

TABLE VI.—*Abstract of Meteorological Data, from Observations taken at 40, Fitzwilliam-square, West, Dublin,* by J. W. MOORE, M.D.

Month	Mean* Height of Barometer	Mean* Temp.	Mean* Humidity	Rainfall† in Inches	Rainy‡ Days	Mean* Direction of Wind	Remarks
	″	°	%	″			
January -	30·153	42·6	86·0	1·557	20	W. & S.W.	Open weather, with an excess of moisture and cloudiness.
February -	30·194	44·1	86·5	1·576	14	W.	Very mild, with singularly high atmospherical pressure.
March -	30·140	43·8	81·0	1·157	17	N.W. & W.	Mild and stormy at first; bitterly cold, with frosts and falls of snow and hail from 22nd.
April -	29·808	48·4	81·0	2·350	16	S.E.	First few days wintry; then genial weather.
May -	29·719	52·9	78·5	4·540	23	S.W. & W.	Exceedingly changeable; persistent and heavy rainfall.
June -	29·898	58·1	81·5	5·058	19	S.E. & N.W.	First half very wet; second half more summer-like.
July -	30·092	61·7	79·0	·650	9	W.N W. & E.N.E.	Beautifully fine, with very little rain, and periods of bright, warm weather.
August -	29·740	59·8	85·5	4·641	22	W., N.E., & E.	Very changeable, with frequent heavy rains.
September	29·957	56·1	84·5	1·684	16	W., S.W., & N.W.	Pleasantly fine and dry until the 14th; afterwards showery and broken.
October -	29·693	50·6	85·5	2·095	16	S., W., & N.W.	Averagely fine; warm until the 21st, when a cold period set in.
November	29·898	37·4	89·0	1·338	11	N.W.	The coldest November experienced in Dublin since 1807; mean temperature 6·4° below the average.
December	29·753	32·5	91·0	1·616	19	W. & N.W.	Most inclement; snow on ground from 8th to 27th; mean temperature 8·7° below the average
	″	°	%	″			
Means and Totals -	29·920	49·0§	84·1	28·262	·202	W. & N.W.	A mild and open spring; a showery summer, except in July; a dry autumn; and a remarkably inclement winter.

1879.

January -	30·008	35·0	81·5	1·714	10	S.E. & E.	Very wintry, the mean temperature 6·6° below the average.
February -	29·500	39·7	88·5	3·706	23	E.S.E. & W. by N.	A very wet, dull, and rather cold month, the mean temperature some 3° below the average.
March -	29·948	41·9	84·0	1·827	16	W. & E.	An averagely fine March; the first half dry and mild, the second half cold and dull.

* The columns marked with an asterisk are the results of observations taken daily at 9 a.m. and 9 p.m. The readings of the Barometer are corrected and reduced to 32° at Mean Sea Level.

† The rainfall is recorded daily at 9 a.m.

‡ A "Rainy Day" is one on which at least ·01 inch of rain falls.

§ The Mean Temperature calculated from the maximal and minimal readings of the Thermometer by Kaemtz's Formula was 48·6°.

From Table VI. it appears that the spring of 1878 (the first quarter of the hospital year, ending March 31, 1879,) was mild and open; the summer was showery, except in July, which was beautifully fine, with very little rain (scarcely *two-thirds* of an inch), and periods of bright warm weather; the autumn was dry, and the winter remarkably inclement. A depression of temperature unprecedented in duration commenced on October 21, 1878, continuing almost without interruption to the end of the hospital year. The deficit of temperature amounted in November to 6·4°, in December to 8·7°, in January to 6·6°, in February to 3·0°, and in March to 1·0°, or a deficit of 5·1° extending over the entire five months. Such continuous cold had probably not occurred within living memory—certainly not in the present century—and it reacted most unfavourably on the public health, raising the bills of mortality in Dublin to an alarming height.

TABLE VII.—*Temperature of the Air in Dublin in* 1878, *and Average for previous Twelve Years.*

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year
1866	43°0	39°9	41°1	47°0	48°9	56°8	59°8	57°2	51°9	50°5	45°4	44°4	48°8
1867	35·0	45·0	38·2	48·9	50·9	57·6	57·5	60·2	55·5	49·5	42·6	41·4	48·5
1868	41·2	44·1	46·3	48·8	54·3	58·9	61·7	59·4	56·8	46·9	42·7	44·1	50·4
1869	43·4	45·9	40·3	49·1	47·5	54·9	61·9	58·2	56·0	51·1	44·3	39·1	49·3
1870	40·7	39·9	42·8	48·6	52·9	58·5	62·1	59·3	56·1	49·4	41·5	36·7	49·0
1871	37·3	45·3	45·6	48·7	52·5	56·0	59·2	60·8	53·6	50·7	42·6	41·4	49·5
1872	41·6	45·2	45·1	47·3	49·3	55·2	61·2	58·9	54·8	46·5	43·6	41·4	49·2
1873	42·2	37·1	42·0	46·3	50·7	57·9	60·2	59·2	53·0	47·1	45·1	44·7	48·9
1874	42·8	41·6	45·8	49·2	49·8	56·6	60·6	58·0	54·9	49·5	45·8	36·1	49·2
1875	45·5	40·3	43·1	45·4	53·7	55·3	57·0	60·0	57·2	49·3	43·8	40·4	49·3
1876	42·3	41·6	40·2	46·0	49·4	55·7	60·7	58·9	54·0	52·4	43·5	44·0	49·1
1877	42·8	43·9	41·4	45·3	48·7	57·3	57·8	57·6	52·4	50·1	45·0	41·5	48·7
Average	41°5	42°5	42°7	47°6	50°7	56°8	60°0	59°0	54°7	49°5	43°8	41°2	49°2
1878	42°4	43°9	43°6	47°8	52°4	57°2	61°0	59°8	55°6	50°7	37°3	32°0	48°6

N.B.—The temperatures given above were deduced from the maximal and minima readings of the thermometer by Kaemtz's Formula—viz., min. + {max.—min. × ·41} = mean temperature.

TABLE VIII.—*Showing the Monthly and Yearly Rainfall at Dublin during the Years* 1865 *to* 1878, *inclusive.*

Year	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Yearly Rainfall
	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches	Inches
1865	1·893	2·321	1·476	1·301	3·412	·727	3·633	3·395	* ·056	3·056	3·329	2·863	27·462
1866	1·889	2·063	3·629	2·119	1·810	3·568	1·013	2·172	2·734	1·733	1·489	1·660	25·879
1867	3·086	1·809	4·972	2·181	2·804	1·118	3·443	1·775	1·176	2·848	1·258	·771	27·241
1868	2·638	1·232	1·646	1·930	·891	·677	·741	4·745	2·684	·856	2·146	4·749	24·935
1869	4·258	1·272	2·422	1·490	5·414	·791	·739	1·559	3·957	1·074	1·989	2·594	27·559
1870	2·347	1·440	1·789	·838	1·157	·796	·539	1·514	1·634	5·194	1·218	2·393	20·859
1871	2·624	1·648	·815	3·162	·378	2·265	‡ 4·391	1·065	4·048	2·917	1·258	·797	25·368
1872	2·864	2·557	2·419	2·655	2·164	3·276	1·098	4·302	2·464	3·421	3·414	4·932	35·566
1873	2·650	·925	2·391	·498	·907	·939	3·408	3·944	2·368	3·089	2·009	·692	23·820
1874	2·019	2·683	·953	1·315	1·747	·405	2·515	§ 4·946	1·709	2·508	3·179	3·207	27·186
1875	2·141	2·477	1·040	1·008	1·071	2·989	2·751	1·883	3·180	7·049	3·051	1·310	29·950
1876	·406	3·012	2·158	2·601	·798	1·260	1·337	2·260	3·146	4·505	3·614	† 7·566	32·663
1877	4·322	1·560	2·741	4·707	2·343	·921	3·300	3·536	1·795	2·153	2·438	2·330	32·146
1878	1·557	1·576	1·157	2·350	4·540	5·058	·650	4·641	1·684	2·095	1·338	1·616	28 262
Means	2·478	1·898	2·115	2·011	2·102	1·771	2·112	2·981	2·330	3·036	2·267	2·677	27·778

* September, 1865, was the *driest* month of the fourteen years.
‡ July, 1871, was the *wettest* month of the fourteen years.
† December, 1876, was the month of the heaviest rainfall.
§ Heaviest rainfall in 24 hours = 2 482 inches, on August 13th, 1874.

Table VII. gives the monthly and yearly mean temperature of the air in Dublin in each of the years from 1866 to 1878 inclusive, together with the corresponding average mean temperatures in the twelve years ending 1877. The values are deduced from the daily readings of the maximal and minimal thermometers by Kaemtz's Formula. Table VIII. shows the amount measured in inches of the monthly and yearly rainfall in Dublin during the years 1865 to 1878 inclusive. From this Table it appears that September, 1865—the mean temperature of which month was 60·2°, or 5·4° above the average—was the month of the least rainfall (·056 inch) in the 14 years; while December, 1876, was the month of the heaviest rainfall (7·566 inches). The heaviest rainfall in 24 hours noted during the 14 years occurred on August 13, 1874, and amounted to 2·482 inches.

Table IX.—*Showing the Monthly and Yearly Number of Rainy Days* at Dublin during the Years* 1865 *to* 1878, *inclusive.*

Year	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total Rainy Days
1865	13	20	14	9	19	5	17	19	‡ 3	17	18	15	169
1866	22	22	21	18	13	17	13	20	22	13	15	19	215
1867	17	18	22	25	12	6	17	16	13	20	8	13	187
1868	17	14	11	12	10	6	5	13	11	15	19	27	160
1869	18	18	17	14	19	11	9	10	21	11	17	20	185
1870	14	18	11	8	14	9	8	7	11	18	11	16	145
1871	20	16	12	20	9	16	†28	12	13	16	14	15	191
1872	23	20	21	12	22	19	12	17	22	22	24	24	238
1873	21	8	22	8	17	13	25	23	13	18	14	7	189
1874	14	12	12	16	14	9	19	18	13	22	19	18	186
1875	23	17	14	12	15	20	18	14	14	26	19	13	205
1876	9	23	23	17	6	14	10	14	17	20	20	§ 22	195
1877	25	19	20	21	18	12	25	24	10	16	22	17	229
1878	20	14	17	16	23	19	9	22	16	16	11	19	202
Means	18·3	17·1	16·9	14·9	15·1	12·6	15·4	16·3	14·2	17·8	16·5	17·5	192·6

* *I.e.*, days on which ·01 inch, or upwards, of rain fell within the 24 hours.
† *Wettest* month of the fourteen years. Rainfall = 4·291 inches.
‡ *Driest* month of the fourteen years. Rainfall = ·056 inches.
§ Month of the heaviest Rainfall = 7·566 inches.

Table IX. supplements Table VIII. by giving the monthly and yearly number of *rainy* days in Dublin during the 14 years ending 1878. A "rainy day" is defined by meteorologists to be one on which ·01 inch (one-hundredth of an inch), or upwards, of rain falls within the 24 hours. From this Table it appears that July, 1871, was the *wettest* month of the 14 years, rain having fallen on 28 out of 31 days, to the amount of 4·391 inches; and that September, 1865, was the *driest* month, rain having been measured in appreciable quantity (·01 inch or upwards) on only 3 out of 31 days, to the remarkably small amount of ·056 inch.

SPECIAL DISEASES.

It will now be necessary to analyse in detail the statistics of the principal febrile diseases treated during the year.

I. Continued Fevers.—The comparative prevalence of the different forms of Continued Fever in the past five years is shown by months, quarters, and years, in Table X., which also contains the monthly and annual mean temperature of the air during the same period of five years. To this Table is appended a summary for *nine* years. The general summary of the cases of Continued Fever for the year 1878–79 is as follows:—Total number of admissions 375, being a decrease of 30 on the previous year. Of the patients 30 died—25 of typhus and 5 of enteric fever—thus giving a mortality of exactly 8 per cent., compared with 4·91 in 1877–78, and 6·48 in 1876–77.

(*a.*) *Typhus.*—From Tables X. and XI. this form of Continued Fever is shown to have been both more prevalent and more fatal than in the preceding year. The admissions were 142 in number, compared with 134 in the year 1877–78; and the deaths were 25, compared with 20 in 1877–78. The mortality rose from 14·9 per cent. to 17·6 per cent. Table XI. proves that age has a much greater influence on the death-rate of typhus than sex. Of 36 patients under 15 years of age, only *one* died, giving a mortality of scarcely 2·8 per cent. On the other hand, of 17 patients aged 40 years or upwards, 10 died, giving a mortality of 58·8 per cent. From 15 to 40 years the death-rate was 15·7 per cent., 14 out of 89 patients having succumbed. The male patients numbered 82, the female only 60. Of the former 14 died, the mortality being 17·0 per cent.; of the latter 11 died, the mortality being 18·3 per cent.

TABLE X.—*Showing, by Months, Quarters, and Years, the Admissions of Typhus, Enteric, and Simple Fever into Cork-street Fever Hospital for five years, ending March 31st, 1879; also the Monthly Mean Temperature.*

Mean Temp. Fahr.	Month and Year	Typhus Fever		Enteric Fever		Simple Fever		Annual Totals
		Monthly Total	Quarterly Total	Monthly Total	Quarterly Total	Monthly Total	Quarterly Total	
49·2°	April, 1874	5		17		27		
49·8	May, -	10		7		10		
56·6	June, -	17		5		22		
			32		29		59	
60·6	July, -	15		14		17		
58·0	August, -	5		14		16		
54·9	September, -	6		5		26		
			26		33		59	
49·5	October, -	13		4		32		
45·8	November, -	6		4		11		
36·1	December, -	12		3		15		
			31		11		58	
45·5	January, 1875	16		7		24		
40.3	February, -	1		3		13		
43·1	March, -	6		0		16		
			23		10		53	
	Total, -		112	—	83	—	229	424
45·4	April, 1875	16		2		13		
53·7	May -	12		2		12		
55·3	June,	3		2		22		
			31		6		47	
57·0	July, -	8		0		23		
60·0	August, -	11		6		16		
57·2	September, -	5		12		13		
			24		18		52	
49·3	October, -	7		8		16		
43·8	November, -	17		1		12		
40·4	December, -	12		4		16		
			36		13		44	
42·3	January, 1876	3		4		5		
41·6	February, -	6		3		7		
40·2	March, -	9		3		7		
			18		10		19	
	Total, -	—	109	—	47	—	162	318
46·0	April, 1876	2		1		20		
49·4	May, -	6		5		18		
55·7	June, -	11		6		13		
			19		12		51	
60·7	July, -	9		1		15		
58·9	August, -	6		4		25		
54·0	September, -	4		5		17		
			19		10		57	
52·4	October, -	6		5		12		
43·5	November, -	13		2		17		
44·0	December, -	8		3		17		
			27		10		46	
42·8	January, 1877	13		12		16		
43·9	February, -	9		3		18		
41·4	March, -	13		8		12		
			35		23		46	
	Total, -	—	100	—	55	—	200	355

TABLE X.—*continued.*

Mean Temp. Fahr.	Month and Year	Typhus Fever		Enteric Fever		Simple Fever		Annual Totals
		Monthly Total	Quarterly Total	Monthly Total	Quarterly Total	Monthly Total	Quarterly Total	
°								
45·3	April, 1877	13		4		18		
48·7	May, -	13		3		24		
57·3	June, -	13		4		18		
			39		11		60	
57·8	July, -	10		6		17		
57·6	August, -	11		7		9		
52·4	September, -	16		5		7		
			37		18		33	
50·1	October, -	9		0		14		
45·0	November, -	10		5		18		
41·5	December, -	16		0		31		
			35		5		63	
42·4	January, 1878	7		5		23		
43·9	February, -	5		4		29		
43·6	March, -	11		8		12		
			23		17		64	
	Total, -	—	134	—	51	—	220	405
47·8	April, 1878	11		5		13		
52·4	May, -	7		2		16		
57·2	June, -	14		7		18		
			32		14		47	
61·0	July, -	15		6		19		
59·8	August, -	14		5		13		
55·6	September, -	17		6		13		
			46		17		45	
50·7	October, -	11		8		20		
37·3	November, -	15		6		6		
32·0	December, -	13		6		14		
			39		20		40	
34·7	January, 1879	9		2		21		
39·5	February, -	9		4		11		
41·6	March, -	7		3		9		
			25		9		41	
	Total, -	—	142	—	60	—	173	375

SUMMARY FOR NINE YEARS.

Mean Temp. Fahr.	Years	Typhus	Enteric	Simple	Totals
°					
49·4	1870–1	377	118	641	1,136
49·8	1871–2	173	187	368	718
48·3	1872–3	130	75	284	489
49·5	1873–4	113	77	173	363
49·1	1874–5	112	83	229	424
48·9	1875–6	109	47	162	318
49·4	1876–7	100	55	200	355
48·8	1877–8	134	51	220	405
47·5	1878–9	142	60	173	375

Table XI.

Showing the Number Admitted and Dead of Typhus Fever, of both Sexes, and at different Ages, for the year ending March 31st, 1879.

Males				Females			
Ages	No. Admitted	No. Died	Mortality per cent.	Ages	No. Admitted	No. Died	Mortality per cent.
Under 5 - -	2	—	—	Under 5 - -	—	—	—
5 and under 15	22	1	4·5	5 and under 15	12	—	—
15 „ 20	19	1	5·2	15 „ 20	19	4	21·0
20 „ 40	29	6	20·6	20 „ 40	22	3	13·6
40 „ 60	9	5	55·5	40 „ 60	6	3	50·0
60 „ 80	1	1	100·0	60 „ 80	1	1	100·0
Total, -	82	14	17·0	Total, -	60	11	18·3

Total No. Admitted, 142	Total No. Died, - - 25	Average Mortality, - 17·6

Contrary to the rule, the greatest incidence of the disease (46 cases) corresponded with the summer quarter (Table X.), thus coinciding with a tolerably advanced stage of the epidemic of smallpox.

Three cases of typhus fever were admitted in a hopeless state, as may be seen by referring to Table IV. One of these survived one day, having been sent in on the fourteenth day of the fever; a second also died within twenty-four hours of gangrene of the fingers on the fourth day of illness; and the third succumbed in eight hours, having been seven days sick before admission.

(*β.*) *Enteric Fever.*—This form of Continued Fever was also more prevalent and more fatal than in 1877–78, when 51 cases were admitted, of whom *not one died.* The admissions in 1878–79 were 60; of the patients 5 died, giving a death-rate of 8·3 per cent. In the six months ending December, 37 out of the 60 cases were admitted—October having the highest number of cases, namely 8. The sexes were about equally attacked (see Table XII.)—28 males and 32 females. The mortality was higher among females (9·3 per cent.) than among males (7·1 per cent.); but here also age influenced the mortality to a much greater extent than sex. Under 15 years one death occurred among 13 cases—or at the rate of 7·7

deaths per cent.; from 15 to 20 years there were 20 cases, all of which recovered; from 20 to 40 years there were 24 cases, 4 of which died, the mortality being 16·7 per cent.; above 40 years 3 cases occurred, all the patients doing well.

TABLE XII.

Showing the Number Admitted and Dead of Enteric Fever, of both Sexes, and at different Ages, for the year ending March 31st, 1879.

MALES				FEMALES			
Ages	No. Admitted	No. Died	Mortality per cent.	Ages	No. Admitted	No. Died	Mortality per cent.
Under 5 - -	—	—	—	Under 5 - -	1	—	—
5 and under 15	8	1	12·5	5 and under 15	4	—	—
15 „ 20	8	—	—	15 „ 20	12	—	—
20 „ 40	11	1	9·1	20 „ 40	13	3	23·0
40 „ 60	1	—	—	40 „ 60	1	—	—
60 „ 80	—	—	—	60 „ 80	1	—	—
Total, - -	28	2	7·1	Total, - -	32	3	9·3
Total No. Admitted, 60		Total No. Died, - - 5		Average Mortality, - 8·3			

(γ.) *Simple Fever.*—There was a considerable falling off in the number of patients who were admitted suffering under this form of fever. There were 173 cases, against 220 in 1877–78. As usually happens, no doubt, abortive cases of typhus and enteric fever are included in these figures. No death occurred, and the disease was about equally spread over the four quarters of the year—the admissions being 47 in the first, 45 in the second, 40 in the third, and 41 in the fourth, quarter of the hospital year.

II. THE EXANTHEMATA, or ERUPTIVE FEVERS.—(*a.*) *Scarlatina.*—This disease furnished a much larger number of cases than in the previous year, when the admissions were only 18. The total number of cases was 71, of which not less than 42 were admitted in the month of January. Most of the patients who came under treatment during that month were from the South Dublin Union Workhouse, where a mixed epidemic of scarlatina

and measles of exceptional severity prevailed for several weeks at the beginning of 1879. The type of the disease was very malignant, and the extreme youth of many of the patients, together with the intensely cold season, caused the death-rate to be deplorably high. From the end of January scarlatina occasionally attacked some of the convalescents from smallpox, while they were still confined to bed—or, at all events, before they had left the epidemic wards. The origin of this diffusion of scarlatina in the smallpox hospital is not easily explained, as strict quarantine was maintained between the fever and smallpox hospitals. It is possible—I do not say probable—that the outbreak was of spontaneous origin from the infected state of the smallpox wards with variolous matter, and from the prevalence in them of suppurating sores—boils, furuncles, and abscesses. Be that as it may, the desirability of closing the epidemic wards in rotation for the purpose of disinfecting them was fully recognised, and as far as was practicable these wards in turn were closed and thoroughly cleansed, aired, and disinfected.

Table XIII.

Showing the Number Admitted and Dead of Scarlatina, of both Sexes, and at different Ages, for the year ending March 31st, 1879.

Males				Females			
Ages	No. Admitted	No. Died	Mortality per cent.	Ages	No. Admitted	No. Died	Mortality per cent.
Under 5 - -	10	6	60·0	Under 5 - -	23	10	43·4
5 and under 15	17	2	11·7	5 and under 15	14	3	21·4
15 „ 20	1	—	—	15 „ 20	1	—	—
20 „ 40	2	—	—	20 „ 40	3	1	33·3
40 „ 60	—	—	—	40 „ 60	—	—	—
60 „ 80	—	—	—	60 „ 80	—	—	—
Total, -	30	8	26·6	Total, -	41	14	34·1
Total No. Admitted, - 71		Total No. Died, - - 22		Average Mortality, 31·0			

A reference to Table XIII., in which the cases are analysed, shows that of the 71 patients, 64 were under 15 years of age, and of these 21 died, or 32·8 per cent.; while 33 were under 5 years

of age, of whom 16 died, or 48·5 per cent. Among the total number of patients admitted (71) there were 22 deaths—the average mortality thus reaching the very high figure of 31 per cent. Of the 22 deaths, 12 occurred in January and 7 in February, in which months the admissions were 46 (*i.e.*, 42 in January and 4 in February); the mortality, therefore, was at the rate of 41·4 per cent. of those treated in those months. According to Table IV., two patients suffering under scarlatina survived only two days after admission, while one patient, who had been seven days ill before admission, succumbed within 24 hours.

TABLE XIV.

Showing the Number Admitted and Dead of Measles, of both Sexes, and at different Ages, for the year ending March 31st, 1879.

MALES				FEMALES			
Ages	No. Admitted	No. Died	Mortality per cent	Ages	No. Admitted	No. Died	Mortality per cent
Under 5 - -	9	2	22·2	Under 5 - -	12	6	50·0
5 and under 15	2	—	—	5 and under 15	5	1	20·0
15 „ 20	1	—	—	15 „ 20	—	—	—
20 „ 40	5	—	—	20 „ 40	1	—	—
40 „ 60	—	—	—	40 „ 60	—	—	—
60 „ 80	—	—	—	60 „ 80	—	—	—
Total, -	17	2	11·7	Total, -	18	7	39·0
Total No. Admitted, - 35		Total No. Died, - - 9		Mortality Average, 25·7			

(*β.*) *Measles.*—From Table XIV. it appears there was a decrease in the number of cases of this disease (35) compared with the year 1877–78, when 42 cases were treated; but the mortality was very much higher, being 25·7 per cent. compared with 4·7 per cent. The total number of patients admitted was 35, of whom 9 died, or more than one-fifth. All the deaths took place in January, among children admitted from the South Dublin Union Workhouse. In that month the admissions were 18, and the mortality accordingly was 50·0 per cent. Eight of the 9 victims to the disease were under 5 years of age. Besides these, a girl aged 7 years also

succumbed to what seemed to be an attack of scarlatina and measles combined. As will be seen from Table IV., two of the fatal cases survived only two days after admission, another lived but one day, and a fourth died in 3 hours.

(γ.) *Smallpox.*—Throughout the hospital year the prevalence of smallpox—which disease commenced to show itself in Dublin in the autumn of 1876, smouldered on during 1877, and blazed into an epidemic early in 1878—taxed the resources of the hospital to the uttermost. The admissions in the year ending March, 1879, were 1,509, or an increase of 1,243 on the preceding year. In the Medical Report of this Hospital for 1877–78, my colleague, Dr. Grimshaw, showed, by a comparison of the number of public vaccinations performed in Dublin since the Compulsory Vaccination Act came into force in 1864, with the number of births in the Dublin Registration District, that ever since the subsidence of the panic caused by the smallpox epidemic of 1871–73 the vaccinations had fallen considerably below what they had been immediately after the Act of 1864 came into force, and in fact had fallen to the same dangerous point which was reached previous to the epidemic of 1871–73.

Commenting on this ominous fact, he observed:—"It is thus clear that neglect of vaccination had prepared a suitable soil for the propagation of smallpox; and accordingly, when the disease was introduced in July, 1876, it steadily though slowly spread through Dublin. Two distinct foci of the disease were established in the summer of 1876—one on the north, the other on the south side of the city; that on the north was in the person of a servant from Stoneyhurst College, in Lancashire, who having been exposed to smallpox contagion in Liverpool, developed the disease after his arrival in Dublin, and unfortunately became the centre of an outbreak in one of the Dublin Hospitals. The focus on the south side of the city was established by a woman from Manchester, who spread the contagion through accident at a general hospital. Thus by an unfortunate series of accidents the general hospitals became the means of disseminating the disease. These instances serve to show in the most conclusive manner the great risk that is run when a virulently contagious disease is introduced into the body of a general hospital, and the great importance of such institutions as Cork-street Fever Hospital, where complete isolation can easily be secured. An hospital cannot be considered fit for the reception of contagious fever unless it provides for the complete isolation of

each form of contagious fever, and has sufficient accommodation to enable patients to be retained within its walls until completely convalescent and free from contagion."

TABLE XV.

Showing the Number of Cases of Smallpox admitted per Month to Cork-street Hospital since the commencement of the present Epidemic.

1876.		1877.		1878.		1878.	
August	1	April	3	January	19	September	48
September	0	May	4	February	76	October	54
October	0	June	3	March	106	November	76
November	3	July	2	April	175	December	152
December	5	August	4	May	178	1879.	
1877.		September	2	June	167	January	237
January	8	October	3	July	168	February	94
February	5	November	8	August	86	March	74
March	7	December	23				

Table XV. illustrates the progress of the epidemic from its commencement in November, 1876, to the close of the hospital year, 1878–79. One of the most interesting features in the Table is the marked influence which season has on the prevalence of the disease—a fact which is further exemplified in Table XVI., containing the monthly admissions during the epidemic of 1871–73. Smallpox is essentially a disease of winter and spring. From November the monthly number of cases is high, but from May a rapid decline in the prevalence of the disease takes place. In other words, a mean temperature below 50° favours its spread, while a mean temperature above 50° checks it. These views have long since been published by Dr. Edward Ballard,[a] and by the present writer.[b] As the experience so far of the existing epidemic confirms them, there is good reason to hope that with the advancing summer the prevalence of smallpox will diminish and the plague be stayed.

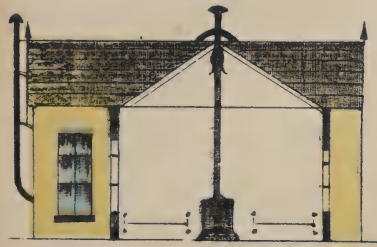
[a] Medical Times and Gazette, March 11, 1871.

[b] Manual of Public Health for Ireland. 1875. Page 298.

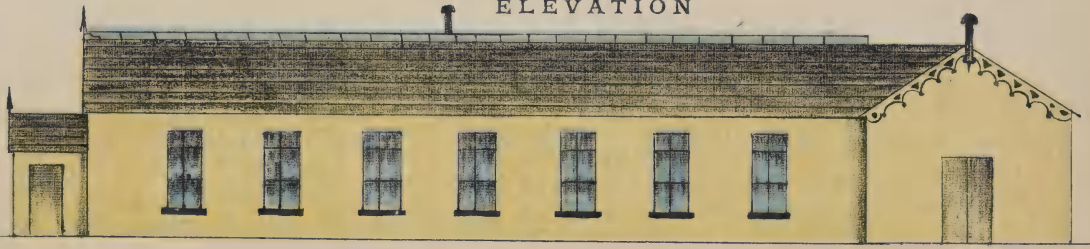
AUXILIARY WOODEN HOSPITAL,

Erected in the Cork-street Hospital Grounds, 1878.

SECTION

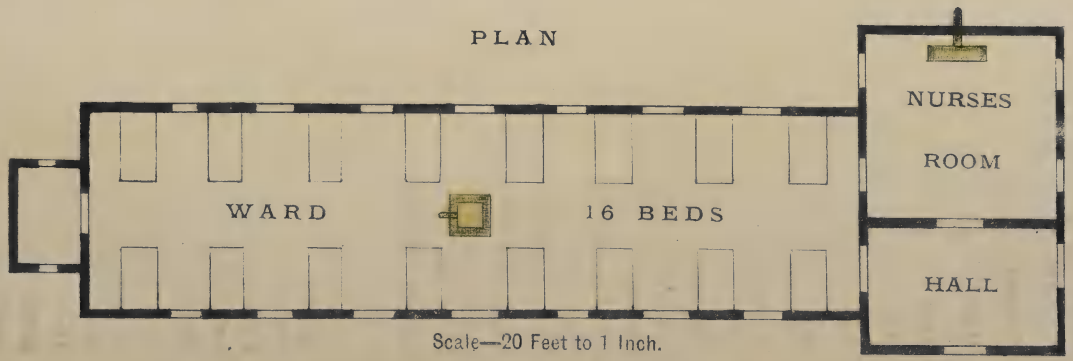


ELEVATION



Dimensions of Ward:—80 feet Long; 20 feet Wide; 16½ feet Mean Height. 1650 cubic feet air space to each Patient.

PLAN



Scale—20 Feet to 1 Inch.

G. Purcell Atkins, Del.

Table XVI.

Showing the Number of Cases of Smallpox admitted per Month to Cork-street Hospital during the Smallpox Epidemic of 1871–73.

1871.		1871.		1872.		1872.	
February	1	September	8	March	97	October	7
March	1	October	41	April	65	November	3
April	7	November	59	May	59	December	8
May	5	December	78	June	64	1873.	
June	7	1872.		July	34	January	2
July	1	January	81	August	16	February	1
August	4	February	90	September	7	March	0

A comparison of Tables XV. and XVI. with each other also proves how much more severely the resources of the hospital have been strained of late than they were in the outbreak of 1871–73, and how much more protracted the present visitation is. Indeed, it is not easy to see how the hospital could have opened its doors to *every* applicant as it did, had the auxiliary wooden hospital [see Plate] not been in existence. The pressure of the epidemic rendered it necessary to increase the number of beds in it from 16 to 26, so that each patient had only 1,000 instead of 1,650 cubic feet, as originally intended. There were 700 male patients treated in this wooden hospital during the year.

Localities from which the Patients came.—From its situation, the majority of the patients admitted into Cork-street Hospital almost necessarily come from the south side of the city. The Hardwicke Fever Hospital receives many of the sick of the north side. But not the least curious and suggestive fact touching the present outbreak of smallpox is its much greater diffusion of late on the south than on the north side of the River Liffey. According to the Reports of the Registrar-General for Ireland, the deaths in Dublin from smallpox were, in 1876, south side, 3; north side, 4; in 1877, south side, 15; north side, 18; in 1878, south side, 400; north side, 107; and in the first quarter of 1879, south side, 165; north side, 54; total, up to March 31, 1879: south side, 583; north side, 183—that is to say, the disease was more than three times as destructive to life on the south side than on the north side of the river. It is to be noted that neither the deaths in the

suburbs nor those of persons admitted into public institutions in the city from without the Dublin registration district are included in the above statistics.

The following streets furnished the greatest number of cases of smallpox to the hospital during the past year:—*Fourteen cases each*—Brown-street (3 from No. 8, 2 from Nos. 2, 10, and 11) and Malpas-street (6 from No. 1, 3 from Nos. 7 and 4). *Sixteen cases each*—Mercer-street Upper (3 from No. 13, 2 from Nos. 33 and 18), New-street (4 from No. 17, 2 from Nos. 50 and 53), and Nicholas-street (8 from No. 13, 2 from No. 32). *Eighteen cases each*—Earl-street South (3 from Nos. 1, 24, and 41), Francis-street (3 from No. 28 and 2 from No. 38), Townsend-street (2 from No. 178), and Whitefriar-street (4 from No. 19, 3 from Nos. 7 and 20, 2 from Nos. 16 and 25). *Nineteen cases each*—Golden-lane (3 from No. 40, 2 from Nos. 5, 10, 12, and 20) and James'-street (2 from Nos. 14, 29, and 35). *Twenty cases each*—Chancery-lane (3 from Nos. 24, 31, and 35, 2 from Nos. 23 and 32), Cuffe-street (4 from No. 10 and 3 from No. 39), King-street South (3 from No. 25, 2 from Nos. 11 and 18), and Meath-street (2 from Nos. 36, 73, and 34). *Twenty-two cases*—Thomas-street (3 from Nos. 34 and 124, 2 from Nos. 45, 75, and 116). *Twenty-four cases*—Bride-street (2 from Nos. 77 and 104). *Twenty-six cases*—Cork-street (2 from Nos. 22, 26, 47, 30, 77, 97, and 104). *Twenty-eight cases*—Aungier-street (4 from No. 68½, 2 from Nos. 28, 36, and 40). *Thirty-seven cases*—The Coombe (3 from No. 73, 2 from Nos. 6 and 118).

A few cases of smallpox arose sporadically in the Fever Hospital during the year, but the patients were at once removed to the epidemic wards, and there was no spreading of the disease. The origin of the occasional diffusion of smallpox in the Fever Hospital was, no doubt, the occasional admission to that house of a smallpox patient in the period of invasion.

Table XVII. and those which follow it illustrate the principal facts connected with the epidemic from its commencement to the close of the official year. In Table XVII. the disease is classified as "Discrete," "Confluent," and "Malignant." In the year ending March 31, 1879, 1,509 cases were treated, of which 57·8 per cent. were of the discrete variety, 30·2 per cent. were confluent, and 12·0 per cent. were malignant. The mortality amongst the discrete cases was not *one* per cent. (0·9); whereas it was 46·2 per cent. among the confluent, and 76·2 per cent. among the malignant cases.

The mortality among all the cases was 23·6 per cent., exceeding that of the outbreak of 1871–73 (21·6) by 2 per cent., and being very much greater than that of the previous year (1877–78)—namely, 15·0 per cent.

Table XVII.

Showing the relation between the Type of the Disease and the Mortality.

Varieties	Number of Cases	Proportion per cent. of all the cases	Recovered	Died	Mortality per cent.
From April 1st, 1878, to March 31st, 1879.					
Discrete - - -	872	57·8	864	8	0·9
Confluent - - -	456	30·2	245	211	46·2
Malignant - - -	181	12·0	43	138	76·2
Total - -	1,509	100·0	1,152	357	23·6
From April 1st, 1876, to March 31st, 1879.					
Discrete - - -	1,003	55·6	993	10	0·9
Confluent - - -	604	33·5	361	243	40·2
Malignant - -	197	10·9	46	151	76·6
Total - -	1,804	100·0	1,400	404	22·4

From April 1, 1876, to March 31, 1879, 1,804 cases have been treated, of which 55·6 per cent. were discrete, with a mortality of 0·9 per cent.; 33·5 were confluent, mortality, 40·2; and 10·9 were malignant, mortality, 76·6—the total mortality being 22·4 per cent.

Tables XVIII. and XIX. give the relative number of patients of each sex admitted, and illustrate the relative severity of the disease. Many more males than females suffered, but Table XVIII. shows that the percentage of the vaccinated and unvaccinated patients who had confluent smallpox was remarkably constant in the two sexes. Thus, of vaccinated males 23·1, and of vaccinated females 22·2 per cent. were confluent cases; of unvaccinated males 59·3 per cent., and of unvaccinated females 58·5 per cent. were confluent cases.

Table XVIII.

Showing the relation between Vaccination, the Sex of the Patients, and the Type of the Disease.

	Males			Females		
	Total	Confluent	Per cent.	Total	Confluent	Per cent.
From April 1st, 1878, to March 31st, 1879.						
Vaccinated - - -	688	159	23·1	509	113	22·2
Unvaccinated - -	160	95	59·3	152	89	58·5
Total - - -	848	254	30·0	661	202	30·5
From April 1st, 1876, to March 31st, 1879.						
Vaccinated - - -	812	211	26·0	618	166	26·8
Unvaccinated - -	194	118	60·8	180	109	60·5
Total - - -	1,006	329	32·7	798	275	34·4

Table XIX.

Showing the Relation between the Sex of the Patients, the Type of the Disease, and the Mortality.

Sex	Discrete			Confluent			Malignant			Total			
	Total	Died	Mortality per cent.	Total	Died	Mortality per cent.	Total	Died	Mortality per cent.	Total	Recovered	Died	Mortality per cent.
From April 1st, 1878, to March 31st, 1879.													
Males -	494	4	0·8	254	119	46·8	100	70	70·0	848	655	193	22·7
Females	378	4	1·0	202	92	45·5	81	68	84·0	661	497	164	24·8
Total -	872	8	0·9	456	211	46·2	181	138	76·2	1,509	1,152	357	23·6
From April 1st, 1876, to March 31st, 1879.													
Males -	567	5	0·9	329	137	41·6	110	79	71·8	1,006	785	221	21·9
Females	436	5	1·1	275	106	38·5	87	72	82·7	798	615	183	22·9
Total -	1,003	10	1·0	604	243	40·2	197	151	76·6	1,804	1,400	404	22·4

Table XIX. shows that, while the general mortality was somewhat higher among females than among males, the mortality of the malignant cases was considerably greater among females. This was, no doubt, due to the occurrence of cases of abortion, premature confinement with hæmorrhage, and menorrhagia. The accuracy of this observation is corroborated by the notes of some of the fatal malignant cases contained in the following statement, which may also, to a certain extent, be regarded as supplemental to Table IV., containing an analysis of hopeless cases of diseases other than smallpox:—

MALES.

There were Four *Deaths in Discrete Smallpox:—*

1. A boy, aged 13, complicated with meningitis, vaccinated.
2. A lad, aged 16, complicated with cerebro-spinal congestion, vaccinated.
3. A man, aged 27, who had at the same time delirium tremens, vaccinated.
4. A man, aged 23, who had scarlatina and pyæmia, vaccinated.

Amongst the Deaths in Confluent Smallpox:—

1. An infant of 3 months, not vaccinated, lived one day.
2. A child of 7 months, vaccinated three days before admission.
3. A boy, aged 7, only one day in hospital, not vaccinated.
4. A boy, aged 11, complicated with laryngitis, not vaccinated.
5. A man, aged 27, complicated with pneumonia, vaccinated.
6. An infant prematurely born, lived three hours.

Amongst the Deaths in Malignant Smallpox:—

1. A child, aged 3, one day in hospital, with recent vaccination marks.

FEMALES.

There were Four *Deaths in Discrete Smallpox:—*

1. An infant, 9 months old, not vaccinated, inmate of South Dublin Union.
2. A girl of 17, with pleuritis and laryngitis, vaccinated.
3. A girl of 17, with double pleuritis and pneumonia, one month after convalescence from smallpox, vaccinated.
4. A woman, aged 24 (laundress, South Dublin Union), complicated with pneumonia, vaccinated.

Amongst the Deaths in Confluent Smallpox:—

1. A child of 5 months, vaccinated one week before admission.
2. A child of 6 months, lived one day, not vaccinated.
3. A child of 4 years, vaccinated four days before admission.
4. A woman, aged 60, ten hours in hospital, not vaccinated.
5. A child, aged 3, sent in dying, lived a day, not vaccinated.

Amongst the Deaths in Malignant Smallpox:—

1. An infant, lived nineteen hours, prematurely born.
2. A child, aged 6, seven hours in hospital, not vaccinated.
3. A woman of 27, one day in hospital, prematurely confined, vaccinated.
4. A woman, aged 36, sent from Coombe Hospital after miscarriage.
5. A woman, aged 30, sent in dying, lived six hours, not vaccinated.

In addition to the above, *nine* cases of smallpox died, having been in hospital *only one day;* these were consequently *beyond medical aid* when admitted.

The ages of the patients, and the relation between the ages, vaccination, and mortality are given in Table XX.

TABLE XX.

Showing the Relation between the Ages of the Patients, Vaccination, and Mortality.

From April 1st, 1878, to March 31st, 1879.

Ages	Total	Per cent. at each Age	Vaccinated	Per cent. Vaccinated	Died	Mortality per cent.
Under 5 - - -	98	6·4	28	28·5	67	68·3
5 and under 10 - -	135	9·0	91	67·4	43	31·8
10 „ 15 - -	215	14·2	188	87·4	19	8·8
15 „ 20 - -	335	22·2	291	86·8	40	11·9
20 „ 30 - -	484	32·2	409	84·5	113	22·3
30 „ 40 - -	159	10·6	129	81·1	48	30·2
40 „ 50 - -	58	3·8	46	79·9	17	29·9
50 and upwards - -	25	1·6	15	60·0	10	40·0
Total	1,509	100·0	1,197	79·3	357	23·6

From April 1st, 1876, to March 31st, 1879.

Under 5 - - -	122	6·7	38	31·1	79	64·7
5 and under 10 - -	173	9·6	118	68·2	46	26·5
10 „ 15 - -	251	13·9	217	86·4	25	9·9
15 „ 20 - -	393	21·9	343	87·2	42	10·6
20 „ 30 - -	581	32·2	488	84·0	128	22·0
30 „ 40 - -	186	10·3	151	81·2	55	29·5
40 „ 50 - -	69	3·8	56	81·1	19	27·5
50 and upwards - -	29	1·6	19	65·5	10	34·5
Total - -	1,804	100·0	1,430	79·2	404	22·4

It will be noticed that the majority of the patients treated were young adults between the ages of 15 and 30 years. It is a very significant fact that only 28·5 per cent. of the children under 5 years old treated during the year were vaccinated, and that the mortality amongst them was 68·3 per cent. On the other hand, of those aged between 10 and 15 years, 87·4 were vaccinated, and the mortality fell to 8·8 per cent. These facts are more than mere coincidences.

Table XXI.

Showing the Relation between Vaccination and the Prevalence and Severity of Smallpox.

	Discrete			Confluent			Malignant			Total		
	Total	Died	Per cent. Mortality	Total	Died	Per cent. Mortality	Total	Died	Per cent. Mortality	Total	Died	Per cent. Mortality
From April 1st, 1878, to March 31st, 1879.												
Vaccinated -	821	7	0·8	272	73	26·8	104	70	67·3	1,197	150	12·5
Unvaccinated	51	1	1·9	184	138	75·0	77	68	88·3	312	207	66·3
Total -	872	8	0·9	456	211	46·2	181	138	76·2	1,509	357	23·6
Per cent. vaccinated in each class	94·1			59·9			57·4			79·3		
From April 1st, 1876, to March 31st, 1879.												
Vaccinated -	943	9	0·9	377	83	22·0	110	74	67·2	1,430	166	11·6
Unvaccinated	60	1	1·6	227	160	70·5	87	77	88·5	374	238	63·6
Total -	1,003	10	1·0	604	243	40·2	197	151	76·6	1,804	404	22·4
Per cent. vaccinated in each class	94·0			62·4			55·8			79·2		

Table XXI. shows the state of the patients admitted during the present epidemic of smallpox as regards vaccination, and it will well repay careful and attentive study. The number of cases with

which the table deals is so large—namely, 1,804 from April 1, 1876, to March 31, 1879—that the results may be fairly considered conclusive as to the protective influence of vaccination over (1) the type of the disease, and (2) its fatality.

Of 1,003 patients who suffered from discrete smallpox, 943 were vaccinated, and only 60 were unvaccinated—the percentage of those vaccinated being 94·0. There were 10 deaths—the mortality being *one* per cent. 8 of these 10 deaths are accounted for in the statement as to "hopeless" cases given above; 1, an infant of 9 months, was *not vaccinated*. 7 patients succumbed to the complications of discrete smallpox, dying *in* or *after*, not *of* this disease.

Of 604 patients suffering from confluent smallpox, 377 were vaccinated and 227 were unvaccinated—that is, 62·4 only of every 100 patients were vaccinated. There were 243 deaths, the rate of mortality being 40·2 per cent. But of the vaccinated only 22 per cent. died compared with 70·5 per cent of the unvaccinated.

Of 197 malignant cases, 110 were vaccinated, or 55·8 per cent., and 77 were unvaccinated. The deaths numbered 151, the mortality being 76·6 per cent. Of the vaccinated 67·2 per cent. died; but of the unvaccinated 88·5 died.

Of the 1,804 patients, in all, who were admitted, 1,430, or 79·2 per cent., were vaccinated, and 374 were not vaccinated. There were 404 deaths, or a mortality of 22·3 per cent. Among the vaccinated 166 deaths occurred, the mortality falling to 11·6 per cent. Among the unvaccinated 238 deaths occurred, the mortality rising to 63·6 per cent.

In very few instances, indeed, had the patients been revaccinated, probably not in more than 5 of the whole 1,804 cases.

CONCLUSION.

In concluding this Report, I have to record, with a feeling of deep thankfulness, that during the past year not a single accident occurred within the hospital precincts; nor was there any episode to call for public comment or inquiry. When it is remembered that many of the 2,151 patients treated during the year were delirious for days and nights together, such a remarkable immunity from accident bears eloquent testimony to that efficient administration of the hospital which, under Providence, secured so gratifying a result.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Localisation of Cerebral Disease. Being the Gulstonian Lectures of the Royal College of Physicians for 1878. By David Ferrier, M.D., F.R.S. London: Smith, Elder, & Co. 1878. 8vo. Pp. 142.

In Dr. Ferrier's classical work on the functions of the brain he established by experiment certain facts as true for the brains of monkeys—those animals who stand closest to man in development, and from whom alone conclusions applicable to the human brain can with safety be drawn. In the lectures before us the author examines the clinical and pathological evidence derived from observations on man in order to see whether this supports the theory of cerebral localisation, or the doctrine that different regions of the cerebral hemispheres have different functions, and, further, to see whether the localisation of the different functions in the human brain agrees with what has been found in the brains of monkeys.

After some preliminary remarks on the difficulties which are to be encountered in investigations in cerebral physiology, and on the best methods of meeting them, the author considers some of the objections which have been raised to his experiments, and discusses more particularly the views on the functions of the nervous centres which have recently been put forward by Professor Brown-Séquard. He then gives a brief summary of the opinions on cerebral localisation which have been held from the time of Saucerotte to that of Hitzig and Hughlings Jackson, and, finally, shows that, when properly interpreted, there is not that discrepancy in the results of the experiments of different observers that has been asserted by those who are opposed to the views here put forward.

The subject proper is commenced by a consideration of the recorded cases of lesion of the prefrontal lobes—that portion of the brain which may be roughly said to lie in front of the coronal suture. In the monkey electrical irritation of this region causes no motor reaction, and destruction here causes no paralysis of

motion or sensation. In strict accordance with this observation is the negative result as regards motion and sensation which has been seen in men to follow even the most extensive lesions caused either by disease or injury when confined to the anterior portion of the hemispheres. But while both in the experimental lesions and those in men neither paralysis nor loss of sensation resulted, yet the condition of the subjects of the injury was not unchanged by the loss of the prefrontal portion of the hemispheres. In monkeys a change in the animals' character and behaviour was observable—"while not actually deprived of intelligence, they had lost, to all appearance, the faculty of attentive and intelligent observation"—and in very many instances in men destructive lesions limited to the prefrontal lobes—more particularly when these lesions affected both sides of the brain—were followed by similar psychical disturbances, manifested by restlessness, unsteadiness of character, and more or less dementia. By such mental disturbances, unaccompanied by paralysis of motion or sensation, with other indications, which may be absent—such as history of injury of frontal region, disease of parts in the neighbourhood of the anterior portions of the brain (as of the nasal fossæ), pain localised in frontal region, or imperfections in the sense of smell—we must endeavour to make the often difficult diagnosis of lesion of the prefrontal lobes.

The second lecture is devoted to the consideration of cases of destructive lesion of the motor area, which, as determined by experiments on monkeys, includes the bases of the three frontal convolutions, with those bounding the fissure of Rolando—viz., the ascending frontal, ascending parietal, and the postero-parietal lobule, together with the internal aspect of this, called by the French the paracentral lobule. The region of the human brain which is homologous to the motor area in the monkey is easily defined, and, from the peculiarity of its blood-supply by the terminal branches of the middle cerebral artery, it is not uncommon to find softening affecting more or less of the cerebral cortex of this part while the basal ganglia and other parts of the brain remain intact. If the lesion of this region is extensive the result is a paralysis of the opposite side as complete as the hemiplegia which follows destruction of the corpus striatum or of the anterior part of the internal capsule. Like this, the cortical hemiplegia, at first absolute, "gradually subsides into a condition in which there is complete paralysis of all the most volitional movements, while associated alternating or bilateral movements are more or less spared. Hence the hand is

more paralysed than the arm, the arm more than the leg, and the lower facial movements more than the upper, while the muscles of the trunk are scarcely, if at all, affected." Here, too, we frequently find, in the early stages, rigidity or convulsive spasms in the paralysed parts, and, if the paralysis be complete, late contraction occurs, with secondary sclerosis of the motor tracts in the brain and cord.

Circumscribed lesions situated in the motor area cause paralysis on the opposite side, limited in extent; and from a careful consideration of a great number of such cases of monoplegia, the cortical centres for the movements of each group of muscles have been ascertained with a considerable degree of accuracy, and have been found to agree almost exactly, as to their position, with the corresponding centres in the brains of monkeys. From the concluding part of this lecture, which treats of the diagnosis of cortical paralysis, no apology is needed for making the following long quotation.

In case of general destruction of the motor area of the cortex, we have very few or no grounds by which we can distinguish between the paralysis resulting from this and the hemiplegia depending on lesion of the corpus striatum or internal capsule.

"Hemiplegia, complete from the first and permanent, is not, however, the most common type of paralysis depending on lesion of the cortex or subjacent medullary fibres. More frequently paralysis of cortical origin is fractional or dissociated, or is a succession of dissociated paralyses or monoplegiæ. In cortical affections we frequently find a hemiplegia, at first complete, resolving itself into a monoplegia, or a monoplegia becoming a hemiplegia by progressive advance of the disease to other motor centres. This latter is a significant indication of cortical disease. Paralysis of voluntary motion of the arm and leg; of the arm and face, or this combined with aphasia, if the lesion be in the left hemisphere; or paralysis of the inferior facial region; of the arm alone; or of certain movements of the hand and arm; or of the leg alone; without affection of sensation, and without qualitative or quantitative changes in electrical contractility, or direct impairment of nutrition, may be looked upon as depending on lesions of the cortex or subjacent medullary fibres.

"Monoplegia is very often associated with monospasm, or early rigidity of the paralysed limb, or of the muscles governed by the centres surrounding the lesion. Sometimes the paralysed limb may remain motionless while convulsions occur in the others.

"Cortical paralysis is frequently erratic and transitory, more especially in connexion with superficial or meningo-encephalitis; appearing and

then vanishing, first on one side and then on the other. According as the lesion is superficial or invading the whole depth of the cortex and subjacent medulla, we get transitory paralysis or a paralysis which remains permanent, and is followed by ascending sclerosis and late rigidity.

"Whereas early rigidity is of frequent occurrence in cortical disease, it is rare in central cerebral disease; and then particularly, it would seem, when the medullary fasciculi of the fronto-parietal region are irritated—a condition generally found in connexion with hæmorrhagic effusions into the lateral ventricles. Consciousness is less frequently lost in cases of sudden cortical lesion than when similar disease occurs in the central ganglia. This is to be accounted for by the special tendency in the latter case to sudden displacement of the cerebro-spinal fluid, and, through this, general disturbance of the cerebral circulation, in the manner indicated by Duret.

"As an accessory element in the diagnosis of cortical lesions may be taken the fact, noticed by Callender and others, that cortical lesions are more frequently accompanied by localised pain in the head; and I have frequently observed that, even when pain is not spontaneously complained of, it may be brought out by percussion over the seat of lesion.

"While we cannot be quite certain of the position or extent of a cortical lesion causing a sudden and complete hemiplegia, we may take a monoplegia of the leg, or of the arm and leg, as an indication of lesion of the upper extremity of the ascending convolutions close to the longitudinal fissure; brachial monoplegia, as a sign of lesion of the upper part of the ascending frontal convolution, or, if the paralysis affect the hand more particularly, of the ascending parietal convolution; brachio-facial monoplegia, as indicating lesion of the mid-fronto-parietal region; while facial and lingual monoplegia, or this combined with aphasia, indicate lesion of the lower part of the ascending frontal convolution, where the third frontal unites with it."—Pp. 98, 99.

The third lecture begins with a consideration of irritative lesion of the motor area. These are not to be sharply separated from destructive lesions, for in many cases we find a combination of paralysis and of convulsion or spasm, one or the other symptom predominating. In some instances, however, the convulsive affection occurs alone. When an unilateral convulsion with loss of consciousness occurs, or an epileptic fit with predominance of convulsion on one side, we cannot say more as to the seat or nature of the lesion than that it is situated on the side of the brain opposite to that in which the convulsion occurred—for irritation if severe and continued has been found to cause unilateral

convulsion even when applied to parts of the cortex other than the motor area. "If, however, the convulsion be of the character of a monospasm—or if, tending to become generalised, it begin invariably in the same way, and do not cause loss of consciousness, and if it be followed by paresis or paralysis more or less permanent, we may diagnose an irritative lesion of the motor area of the opposite hemisphere." The seat of this may be determined according to the rules for the localisation of destructive lesions, but less exactly since it is difficult to determine the exact focus of the vital irritation.

All the causes of irritation tend to induce irritability and hyperæmia of the cortex and subjacent medullary substance. This hyperæmia has been seen by Ferrier preceding the convulsions caused by electrical irritations, by Magnan in poisoning by absinthe, and by Pitres and Franck in cases where convulsions supervened in dogs after injury of the cortex, and where the irritability of the parts about the cicatrix was so great that even mechanical irritation was sufficient to cause motor discharge.

When a monospasm tends to become generalised it advances from one part to another in regular order. If it begin in the face, the arm is affected before the leg. If the hand be first affected, it goes up the arm, then attacks the face, and lastly the leg. If it begin in the leg, the arm is next convulsed, then the face. Consciousness is usually lost by the time the convulsion is generalised on one side. When the spasm extends to the opposite side Hughlings Jackson thinks the parts are invaded in the reverse order to that followed on the side first attacked; Ferrier, however, has not confirmed this in his experiments. In bilaterally-associated movements irritation of one side of the brain will cause motor discharge on both sides—this even when the cortical centre on one side has been removed.

That sensory perception has its seat in the cerebral hemispheres can admit of no doubt; this is proved both by experimental physiology and by clinical medicine. We have seen that the various parts of the fronto-parietal region may be destroyed without disturbance of sensation, and destruction of the occipital lobes is also without influence either on sensation or motion. Dr. Ferrier, from his experiments, has adduced strong evidence to show that the occipital lobes are the seat of the reception of the various unfelt impressions which come from the viscera, and as these organic sensations constitute such a large part of our personality, it is not

unnatural that lesions of the occipital lobes in men should frequently be associated with profound mental derangement.

In animals the various kinds of sensation have their seat in those parts of the cortex situated between the occipital lobes and the motor area. Visual perception in the angular gyrus; auditory perception in the superior tempero-sphenoidal convolution; the perception of gustatory and olfactory impressions in the region of the subiculum cornu Ammonis, and tactile sensation in the hippocampal region.

The results of clinical observation which up to this have been found to agree so closely with those of experiment here no longer do so, for disease has been found in the human brain after death in each of these parts, and yet no disturbance of sensation has been observed during life. To explain this discrepancy one of two suppositions must be made—either that the brain of man, which, as regards the parts hitherto examined, has been found to be built on the same plan as that of the monkey, is constructed on quite a different model in the sensory portions, or that the latency which has been supposed to characterise the symptoms has been really a *latency of observation*. The latter supposition is that adopted by Dr. Ferrier, and we think rightly. He points out the exceedingly imperfect manner in which the conditions of the various senses are investigated and recorded in almost all instances, and shows that in those cases in which a more careful method was adopted, the results which were found agreed very fairly with what we should have expected to find from the results of experiment. This, and the exceeding improbability that a parallelism so close and exact as that which exists between the human and simian brain should hold only for motion and completely fail for sensation, justifies us in believing with Dr. Ferrier—at all events, provisionally, and until observations more exact than those which have hitherto been made either prove or disprove his opinions.

We cannot take leave of this work without expressing our sense of its great value. It abounds with valuable observations, acute reasoning, and philosophical reflections. It is, in our opinion, by far the most important contribution which has been yet made to the localisation of brain diseases; and we feel we can bestow no higher praise on it than by saying that it is a worthy pathological sequel to the author's great physiological work on the functions of the brain.

Du Mercure, Action physiologique et thérapeutique. Par le DR. HALLOPEAU. Paris: J. B. Baillière et Fils. 1878. Pp. 275.

IT is a noteworthy fact that, while modern researches have taught us much as to the physiological action of mercury, a great part of our knowledge of the therapeutics of the metal and of the best methods of administering it is derived from past ages, as M. Hallopeau shows in the historical portion of his very creditable thesis.

The author is a firm mercurialist in syphilis, and in the directions for treatment appears to closely follow Fournier, to whom he expresses his obligations in the composition of this work. An interesting and tolerably full exposition is given of the local and general therapeutics of mercury; and one of the most valuable parts of the book is the account of the hypodermic use of mercury, although we miss here some of the recent experiments on this point. Upon the important question of the cholagogue action of mercury we get nothing later than an epitome of Fraser's results obtained in 1871. When referring to the employment of crude mercury in the treatment of ileus, a practice of great antiquity, and not yet completely forgotten, he remarks, that while it is not easy to say that it has ever done good, it has certainly done harm, for he has found records of two cases in which it has caused death—in one by perforation of the intestine, and in the other by acute mercurial poisoning. An extensive selected formulary and a copious bibliographical index conclude the volume, which gathers together most of the knowledge we possess upon the action and uses of mercury and its compounds.

Atlas of the Diseases of the Skin. By BALMANNO SQUIRE, M.B. Part I. London: J. & A. Churchill. 1878.

SURELY we have had enough for some time to come of atlases devoted to diseases of the skin; and as we do not believe that cutaneous affections change their habit or put on a new aspect every few years, we fail to see the force of Mr. Squire's apology for the production of this present atlas in the statement "that the last wholly original work of the kind published in this country was issued by himself now more than ten years ago." In 89 pages of text only two affections are discussed—viz., nævus and psoriasis; and of the four plates which accompany it none is, in our opinion,

good. The first and second, illustrating nævus, are just tolerable; the third plate is luckily labelled "Psoriasis diffusa," for we do not think that even a skilled dermatologist would recognise it; and the fourth plate illustrates the same patient *after treatment, i.e.*, it represents the transformation of a hideously-crusted, blear-eyed physiognomy, devoid of eyebrows and eyelashes, into a smooth and spotless skin, with a due allowance of the *tutamina oculi.* How far will an atlas run if all the cures are to be depicted as well as the pathological conditions?

An Essay on Rectal Medication. By Wm. Bodenhamer, A.M., M.D. Pp. 58. New York: W. Wood & Co., 27, Great Jones-street. 1878.

This Essay is intended to draw more attention to the important subject of the administration of food and medicines by the rectum. The method is of great antiquity, and was commended by Hippocrates, Galen, and Celsus; but it has made little progress towards perfection, and the administration of enemata of any kind is often mischievously bungled by nurses, students, and even medical men. It is apparently forgotten that foreign substances introduced into the lower bowel are very apt to excite expulsive action, and that therefore extreme caution should be observed. The author recommends a screw syringe, which has the advantage that the enema cannot be suddenly shot into the rectum by a careless hand. Whatever instrument is used, the fluid should be gently passed in, and so slowly that the bowel may have time to accommodate itself to the presence of the enema. "After the administration of a medicated or nourishing enema, should there be a strong or irresistible desire to pass it—as is the case sometimes when there exists an exquisitely irritable state of the organ—a sponge or fold of cloth dipped in hot water, and firmly pressed against the anus for a while, will generally appease the desire and enable the patient to retain the enema."

The author collects the opinions of some eminent men, and in the end lays down certain conclusions based upon the evidence quoted. He holds that a fuller and more rapid effect can be obtained in this way than by giving drugs by the mouth, and he points out that of narcotics the rectum only requires about one-third of the quantity necessary by the mouth. The book is a very interesting contribution to practical medicine.

PART III.

HALF-YEARLY REPORTS.

REPORT ON MEDICAL JURISPRUDENCE.

By Stewart Woodhouse, M.A., M.D., Dubl.; Lecturer on Institutes of Medicine, Carmichael College of Medicine and Surgery.

STRYCHNIA—ITS ANATOMICAL AND ITS PHYSIOLOGICAL EFFECTS UPON THE BRAIN, SPINAL CORD AND NERVES.

Dr. W. H. Klapp (*Journal of Nervous Diseases*) details at length some very elaborate experiments made upon the above topic. The care and skill exhibited lead us to the belief that his conclusions are approximately correct. They are: (1) Strychnia produces no appreciable primary lesion of nerve substance proper; that secondary lesions are produced—granular degeneration—by the engorgement of the vascular system, and that this is more marked in the brain and cord than in the nerves. (2) The convulsions of strychnia are not cerebral, and they are much more severe after the ablation of the cerebrum, owing to the removal of Setschenow's ganglia. (3) Strychnia does not affect either the sensory or motor nerves at their periphery. (4) Both sensory and motor nerves in their course are unaffected by strychnia. (5) The tetanus-producing power of strychnia has its only action in the gray matter of the spinal cord. (6) In small doses the primary action of strychnia is to excite the vasomotor centre, causing thus a rise in the arterial pressure, and secondarily to paralyse this centre, and hence to supplement this rise by a fall. (7) In large doses the vasomotor centre is immediately paralysed. (8) The slowing of the pulse produced by the exhibition of strychnia to both warm and cold blooded animals is in neither case produced by any action on the central or peripheral ends of the pneumogastrics; but in warm-blooded animals is due to action on the excito-motor ganglia of the heart, and in cold-blooded animals is due to action on the ganglia situated in the sinus venosus. (9) The main vasomotor centre for strychnia is situated in the medulla oblongata, but simpler centres

exist in the spinal cord. (10) The pneumogastric nerves are *not* paralysed by strychnia in either warm or cold blooded animals. (11) Strychnia decreases the number of respiratory movements—at first from too little blood, and afterwards from too much blood flowing to the respiratory centres. (12) The decrease is not due to any action of the pneumogastrics. (13) Artificial respiration always moderates and sometimes stops the spasms; and this power is due to a maintenance of the oxygenation of the blood until the poison can be eliminated, and is not due to a reflex stimulation of the pneumogastrics.

A FORERUNNER OF DEATH.

Dr. Chiapelli says, in *Lo Sperimentale* (No. 1, 1879), that he has frequently noticed in patients who were apparently very far from death an extraordinary opening of the eyelids, so as to give the eyes the appearance of protruding from the orbits, which was invariably a sign that death would occur within twenty-four hours. In some cases only one eye is wide open, while the other remains normal; here death will not follow quite so rapidly, but in about a week or so. It is easy to observe this phenomenon when the eyes are wide open; but when, as is generally the case, the eyes are half shut, and only opened from time to time, it will be found advisable to fix the patient's attention on some point or light so as to make him open his eyes, when the phenomenon will be seen. The author is utterly at a loss to explain this symptom, and ascribes it to some diseased state of the sympathetic nerve.—*Brit. Med. Jour.*

TRICHINOSIS IN SPAIN AND FRANCE.

M. Darder, veterinary inspector at Barcelona, has communicated to the *Revue Médicale* an account of an outbreak of trichinosis in Catalonia, in February. A druggist had invited twenty-eight guests to dinner, when the principal dish was a pig just killed. All the guests were attacked with the characteristic symptoms, and six of them died. Since then the presence of the parasite has been discovered in several districts throughout the North of Spain, and in some places the use of pork has been abandoned. In France (Seine-et-Oise), M. Laboulbène has recorded the first appearance of the disease ever known in that country. In his locality, out of twenty persons who had eaten a dinner of pork, apparently healthy, eleven were seized with serious symptoms, but up to the date of

his communication (3rd May) none had died. He has found from experiment that trichinæ can bear a wide range of heat and cold. A temperature of 20° (centigrade) below freezing point during an entire night did not kill them, and for seventy-two hours they were exposed to a heat ranging from 50° to 60° (centigrade), and yet remained alive. At 70° (centigrade) they perish. Alcohol kills only if it penetrates within the cyst.

POISONING BY DOMESTIC REMEDIES.

M. Duclaux, of Nancy, has communicated to the Medical Society of that town particulars of a case of poisoning by santonine. To a child four and a half years of age twelve vermifuge chocolate tablets had been given. Two hours and a half afterwards the child was comatose; the pupils dilated and insensible to light; the lips swollen; respiration stertorous; the pulse 45 per minute; the skin cold and covered with profuse sweat. The urine was orange, or reddish-brown; it flowed drop by drop, and came away continually. It was not till twelve hours after the accident that the pulse and temperature began to rise, and for twelve hours more the child continued insensible. Energetic frictions and the administration of stimulants were the treatment employed. Ultimately recovery took place. About 5 grains of santonine had been given.

Mr. T. Wood Hill reports in *The Lancet* a case of poisoning by sweet spirits of nitre. A child, aged three years, had drunk out of a bottle that lay inadvertently within its reach about 3 ounces of sweet spirits of nitre. Almost immediately he fell into a state of collapse—becoming cold, almost pulseless, insensible; both pupils fixed and widely dilated; breathing hardly perceptible. He had vomited freely—the contents of the stomach being undigested food (no blood), with a smell of spirit. Although the temperature of the body grew a little warmer and the pulse slightly improved, the vomiting and purging recurred; the breathing became stertorous, and death took place just twelve hours after the fatal dose. On opening the abdomen after death a strong alcoholic odour was emitted. The stomach contained food, chiefly bread, in a state of semi-digestion; the mucous coat was highly inflamed and red near the pyloric end, on the anterior surface of the posterior border, and in one spot very much attenuated. The duodenal end of the small intestines was red and inflamed and bile-stained, the remainder of intestines healthy. Kidneys slightly congested; the other organs healthy. On removing the skull-cap the membranes of the brain

were found highly congested, containing a large quantity of dark-coloured blood. Brain soft, pulpy; vessels congested; no trace of fluid in the ventricles.

DANGEROUS COLOURS IN WALL-PAPERS.

Mr. S. Siebold (London), in a lecture on this subject, stated that out of sixty or seventy papers of various colours—blue, red, brown, pink, &c.—analysed by him, ten only were harmless, the rest containing arsenic. There is a popular impression that green papers only are to be feared; but the result of Mr. Siebold's examination should have the effect of rendering householders and heads of families suspicious of some of the most innocent-looking colours. It is reasonable to assume that to the presence of deleterious ingredients contained in certain wall-papers may be ascribed many little illnesses of children, where no apparent cause exists for them, and which sometimes puzzle the medical attendant.

DIFFERENTIATION OF COMA FROM ALCOHOL.

Dr. MacEwen, in a letter to *The Lancet*, has controverted Dr. Richardson's statement that in alcoholic coma the temperature falls, and that this is a distinguishing mark from other forms of coma. Dr. MacEwen states that he has observed the temperature in a series of cases of fracture of the skull, opium poisoning, and apoplexy, and that in all these cases the temperature was found much below the normal. He also disputes the statement that in alcoholic coma there is dilatation of the pupil. He had found contraction the rule; but he has accidentally discovered that if a patient was shaken or disturbed, the pupil dilated—very soon, however, contracting again. He therefore lays down the rule that an insensible person who, being left undisturbed for from ten to thirty minutes, has contracted pupils, which dilate on his being shaken without any return of consciousness, and then contract again, can be labouring under no other state than alcoholic coma. But the test must have a wider trial before it is finally accepted.

THE DETERMINATION OF SEX IN UTERO.

Dr. Upton, of Michigan, in *New York Medical Record*, writes:—I am led in this connexion to air a theory of the generation of the sexes which, if correct, will throw more light on this mysterious subject of embryology, and will explain the law discovered by M. Thury, Professor in the Academy of Geneva, and referred to in Dr. Mudd's

communication. My experience extends over nearly eight years of obstetric practice, and in every case where I can obtain sufficient and accurate data upon which to base my calculations, I am able to predict the sex previous to delivery. The law is substantially thus—viz., conception resulting from intercourse *subsequent* to the menstrual flow will result in female offspring; while conception from intercourse in the *latter half* of the menstrual period, or *previous* to the menstrual flow, will result in male offspring. Observations and inquiries carefully made with a view to determine the correctness of this law have established its truth, in my own mind, beyond question.

THE RELATION BETWEEN THE AGE OF THE MOTHER AND THE SEX OF THE CHILD.

Bidder, in the *Zeitschrift für Geburtshülfe und Gynäkologie*, Band 2, gives the result of his observations on this subject. In 4,441 primiparæ, the proportion was 100 female to 111·5 male children. Very young primiparæ gave birth to a large proportion of boys; those of twenty or twenty-one years old had more girls than boys; while, as the age increased, the proportion of male children again rose. In 7,430 multiparæ, there were 100 female to 112·4 male children. The proportion of males exceeded that of females in those aged from seventeen to twenty-one; the number sank in the twenty-second and twenty-third years, reached its minimum at the ages of twenty-four and twenty-five, and then again increased in proportion to the age of the mothers.—*Brit. Med. Jour.*

PRECOCIOUS MATERNITY.

At the last winter (1878) assizes, Maidstone, in a case of criminal assault on a girl under twelve, tried before Mr. Day, Q.C., acting as Commissioner, it was proved in evidence that a girl had been delivered at the age of twelve years and one month of a full-grown child, which is still living. With the exception of two cases quoted in "Taylor's Medical Jurisprudence," this is the earliest age of delivery recorded as having occurred in this country.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE COLLEGE OF PHYSICIANS.

SESSION 1878-9.

HENRY H. HEAD, M.D., President.
GEORGE F. DUFFEY, M.D., Honorary Secretary.

Special Meeting, Wednesday, May 14, 1879.

JAMES LITTLE, M.D., Vice-President, in the Chair.

Discussion on Dr. Cameron's Paper, "On an Epidemic of Fever caused by Infected Milk." [a]

DR. LYONS said that Dr. Cameron's main position was that a large number of typhoid cases occurred in certain districts, and that those cases were traceable to a milk epidemic in a certain dairy; that in that dairy typhoid fever existed, and that from the cases of typhoid fever which there occurred the epidemic was spread. Now, if there had been an epidemic confined to only a small locality in the city it might be reasonable to look for the particular cause of it in such circumstances as Dr. Cameron had described. But the cases which occurred in the districts referred to by Dr. Cameron were only a small fraction of the cases constituting an epidemic of typhoid that prevailed over the whole city during last year and the present year. He himself had to deal with a considerable number of cases amongst the Metropolitan Police. The disease occurred amongst persons widely separated from each other, and the only thing they had in common was the Vartry water, upon which, he supposed, nobody would charge the origin of typhoid fever. Dr. Cameron had found a small epidemic in a locality which had been long notorious for the unsanitary condition of the houses in it. It had occurred to Dr. Cameron that the milk supply was the cause of the comparatively small outbreak with which he dealt. No doubt the theory of the possible milk origin of typhoid had been for some years fashionable. He believed that

[a] This paper will be found at page 1.

this theory would not stand the test of investigation, but would play its part for a time and then disappear into the limbo of forgotten fancies and imaginative causes of disease. Dr. Cameron went into the locality which he examined with the preconceived notion that these homogalactists, or partakers of the same supply of milk, were the subjects of a fever which had been conveyed from a particular dairy. He found some individuals sick in that dairy, there being plenty of people sick all round with similar diseases; and he thought that if he should be able to prove that the disease had been conveyed in the milk from the dairy he would immortalise himself. He (Dr. Lyons) happened to be concerned about some of those cases; and he thought he was entitled to have been asked his opinion as to the nature of those cases, but he was not. Was that done? Certainly not. If Dr. Cameron's premises were false, his conclusion fell to the ground. If cases of typhoid fever occurred—as there did in localities adjoining that in question, which had nothing to do with the milk from X's dairy—then it was open to him (Dr. Lyons) to assert that the cases reported in the paper were only part of a visitation common throughout the city, and that they had no connexion with X's dairy. But if it should appear that there was really no typhoid fever in that dairy what would become of Dr. Cameron's theory? He (Dr. Lyons) asserted that there was no typhoid fever, in the strict acceptation of the term, in X's premises from beginning to end. A girl sickened first. She was ill for three or four weeks. She had fever of a kind by no means uncommon—a simple continued fever—but she had no spots or rash of any kind. She had from beginning to end no diarrhœa. She had some slight head symptoms; and, if the case had anything specific about it, the symptoms were those of cerebro-spinal meningitis. The little boy sickened next, and exhibited undoubted symptoms of cerebro-spinal meningitis. He had no eruption of any kind, and no diarrhœa from beginning to end. On the contrary, his bowels were constipated, as were also those of the girl, and enemata and mild purgatives had to be used with them from time to time. The father sickened next, and exhibited symptoms of maculated typhus. His was a case of considerable gravity. At the end of three weeks pulmonary complications came on, and then a few indistinct spots that might have been mistaken for those of typhoid fever, but which were wholly uncharacteristic, made their appearance, and disappeared in twenty-four hours. From beginning to end the man never exhibited symptoms of typhoid fever. So far from his having diarrhœa, which could have occasioned dejecta capable of contamination, the difficulty was to keep his bowels even moderately in action. There was no reason, consequently, for asserting that any of those three cases were capable of speading typhoid fever, or that there were any contaminating dejecta in the dairy-yard in question. The accumulation of ashes Dr. Cameron had spoken of would act as a disinfectant and absorbent of gases. He

(Dr. Lyons) disagreed with Dr. Cameron as to the sanitary condition of X's dairy-yard and immediate personal surroundings, which, in his opinion, were both excellent. Everything that he saw in his numerous visits to the yard evidenced scrupulous cleanliness and care. He never saw the milk-cans exposed. On repeated occasions he used the milk in question, and Dr. Cameron has stated that it was pure on the occasions that he himself examined it. The paper said—"I presume that in the later stages of this man's illness few will doubt that he suffered from typhoid fever." He (Dr. Lyons) begged to deny that. Again, Dr. Cameron said—"The facts I shall bring forward will prove that typhoid fever was spread in December last by means of the milk supplied from this dairy." That assumed what he had not proved—namely, that typhoid fever existed in the dairy. As a matter of fact, during the clamour that arose about this man's milk, numbers of people persisted in using it. From the beginning to the end those cases were treated with the very milk that was impugned and recovered on it, using it cold and boiled, raw and cooked. He believed that the cases of typhoid that had occurred in the district in question were part and parcel of the endemic visitation of typhoid that had prevailed in the city during the last two or three years. He called attention to the fact that it was principally since the introduction of the Vartry water into Dublin that typhoid fever had been so prevalent. He did not incline to the opinion that the Vartry water had anything to do with it; for a very marked change in the food of the people of Dublin had occurred, and he thought that the change of type in the fevers of the city was more due to the food of the inhabitants consisting more extensively of meat than heretofore. In conclusion, he expressed his regret that Dr. Cameron had alarmed the public by bringing forward this subject. He referred to Dr. Harley, with whom he had seen X. and the cases occurring in his (X.'s) house, in consultation, for particulars as to the nature and dates of their respective illnesses.

Dr. Foot said that all who had seen typhoid fever in the other parts of the city would bear him out in the assertion that constipation, or, at all events, the absence of diarrhœa, had been a marked feature of enteric fever for some time past. As far as the evidence went, he did not see that Dr. Cameron's position had been shaken in the smallest degree by Dr. Lyons. Not a shadow of proof had been given against the existence of typhoid fever in the locality to which he referred. Ample evidence had been given by Dr. Murchison of the fact that typhoid fever was communicable by milk; and he considered that no hypothesis but that of Dr. Cameron accounted for the epidemic of typhoid fever in the districts in question.

Dr. Harley said that a complaint had been made by Dr. Lyons that his opinion was not asked in the matter. He (Dr. Harley) was

responsible for that. When Dr. Lyons first saw the father of the children he was in maculated typhus, and going on favourably. A few days afterwards, Dr. Lyons saw him again, and there were two or three rose-coloured spots on his body; and they then agreed that it was typhoid, although there was no diarrhœa. That evening Dr. Cameron came and asked him what was the matter with him, and he said he was afraid it was typhoid. The first case occurred in the house about the 15th of December, and was that of the little girl. The second case was that of the father, and the third that of the boy. The girl was first visited by him on the 15th of December. On the 1st of January the father was covered with typhus spots. On the 2nd of that month he (Dr. Harley) saw Dr. Lyons in consultation about him. He got on well through the typhus, and was sitting up in bed eating chicken, when a new illness set in of an undefined nature. It was accompanied with high fever. He had had bronchitic complications during the typhus, and in his second illness his chest became again affected, and more pneumonic symptoms set in. Then Dr. Lyons saw him again, and continued to see him with him (Dr. Harley) during his convalesence. He went through a very malignant form of low pneumonia after the fever symptoms had abated, but he never had any diarrhœa or abdominal tenderness whatever. Treatment was mainly directed to his lungs. The boy went through a severe attack of cerebro-spinal meningitis. His case was characterised by the absence of diarrhœa, but he had very severe head symptoms. He got well about the same time as his father, after having been ill about a fortnight. He had kept no charts of their temperatures during their illnesses. He paid his first visit to the house on the 15th December. The girl's first illness was called at the time gastric fever. She was feverish, prostrate, and semi-comatose, and slept through the fever. She drank the celebrated milk all the time, and was occasionally treated with lime-water, but never had diarrhœa. With respect to the cases that occurred at St. Mary's-road the illness commenced on the 29th of November. X.'s children got ill on the 15th of December, and were ill for a few days before he (Dr. Harley) saw them. The child that had meningitis was watched by him from the commencement to the end. It went through gastric fever, and convalesced so as to be up in the drawingroom, and ate chicken, contrary to his advice. She then got a relapse, the head became engaged, and the child died of meningitis on the 26th of November.

Dr. Grimshaw said the whole question depended on whether or not the cases at the dairy were enteric fever. He dropped the word "typhoid," because in many cases Dr. Cameron had used the word "typhoidal," which was a mischievous and indefinite expression. On the face of the paper there was no evidence of the existence of typhoid fever in the household in question. It was stated at the end of the account of the father's

illness that he relapsed into a low form of fever accompanied by a few rose spots. The two children were very young, and everyone who knew anything of typhus fever knew that young children attacked with typhus sometimes had no spots at all, and that such cases often closely resembled cases of enteric fever. As to how the poison got into the milk was a question not worth discussing; if contagion were floating about it would have been quite easy for it to get into the milk. Most of the Dublin dairy-yards were in a filthy state. At the time covered by Dr. Cameron's paper typhoid fever was extremely prevalent all over Dublin. Dr. Cameron's figures with regard to the number of persons supplied from the dairy in question were rather indefinite. It was very doubtful that several of the cases which he traced to the use of the milk were typhoid fever at all. The medical men who attended some of them did not say they were typhoid; while the particulars of other cases were given on hearsay. Dr. Cameron mentioned that he did not take the same amount of trouble in investigating the epidemic in other localities, as X.'s customers in them were very few. Those were the very instances that would have settled the case. If he had found that in those places where X.'s customers were very few typhoid fever was very abundant—which, he had no doubt, he would have found if he had looked—it would have been a very important fact. He (Dr. Grimshaw) had lately had considerable dealings with fever cases at the west end of Dublin, and met with a considerable number of typhoid cases, not one of which had any connexion with X.'s dairy. Dr. Cameron had mentioned that in the western districts of Dublin there were houses to which milk was supplied from X.'s dairy, but he did not mention anything in connexion with those cases. The facts mentioned in connexion with the case of Mr. Travers Smith did not prove that he had typhoid fever; and another important point was, that no statistics had been given as to the persons who got milk from this dairy, but who did not get fever. The total of houses supplied, and the results in all the cases not having been given, the conclusions of Dr. Cameron fell to the ground. One of Dr. Cameron's cases was mentioned as having occurred at 24 Elgin-road, and if there was anything whatever in the pythogenic origin of typhoid fever, the case in question must have originated in that way. He had inspected that house, and found that the ground outside the bedroom occupied by the girl was higher than the floor of the room, and the drainage of an adjoining privy was actually draining into it. Why that case should be attributed to the milk he did not know. With all respect, therefore, for his friend Dr. Cameron, he thought that, as typhoid fever was prevalent in all directions in Dublin, there were numerous other sources of it besides the supposed one of the milk of this dairy. Dr. Cameron was, no doubt, right in assuming that if the poison of the disease existed in the dairy-yard, it might have been blown into the

milk by currents of air. He (Dr. Grimshaw) did not think that Dr. Cameron's paper was a satisfactory one. He admitted that the circumstances were suspicious, but he did not think that the evidence established that X.'s dairy had infected all the people who were mentioned, and, therefore, he thought the Society should come to the Scotch verdict of "not proven."

Surgeon-General Crawford, A.M.D., having alluded to the unhealthy condition of the district (the Pembroke Township), in which so many of the cases traced by Dr. Cameron resided, and to the sanitary commission that had been appointed by the commissioners of the township at the request of several influential inhabitants to investigate into the causes of such unhealthiness, said that Dr. Cameron's paper did not dwell on the history of typhoid fever in that locality previous to December. One member of his (Dr. Crawford's) family suffered from typhoid fever so far back as July last. Neighbours of his a little further up suffered in July; and Dr. Chapman would tell them that in Elgin-road and Clyde-road typhoid fever prevailed for a considerable time before they heard anything about X.'s dairy. He believed that the whole district was permeated with whatever was the cause of typhoid fever, and that no statistics regarding the distribution of milk there in December could be accepted as proof to the contrary. If the paper went abroad, and the people of Pembroke Township were thus given reason to suppose that the prevalence of typhoid fever there was due, not to the unsatisfactory sanitary condition of their houses, but to milk from particular dairies, and other external causes, there would be an end of sanitary reform in that township for many years to come. Instances were discovered of serious sanitary defects in houses where this epidemic prevailed. Up to a few weeks before the occurrence of this so-called milk-epidemic there was no question that the common sewers of Raglan-road and Elgin-road had been contaminated by typhoid discharges from cases of typhoid occurring in houses in those roads. The Sanitary Inspection Committee discovered that not a single house on those roads was provided with an intercepting trap, and that there were but very few houses in either of the roads in which the soil pipes, or any other pipes, were ventilated. The sewers themselves were unventilated up to a few weeks before the occurrence of those fevers in Raglan-road, when some ventilators were put into the sewers in that road. In fact, the whole drainage arrangements of those two roads in particular were hermetically sealed up, and no means existed for the escape of the sewer gas except into the houses. Numbers of the houses were vacant for several months between June and November, and the disuse of the sanitary appliances in those houses during that period was not calculated to improve their sanitary state when they were again occupied. Those drains were not flushed during the summer months, and to that might be attributed the

continuance in them of the contagion which afterwards got into the houses, and caused the outbreak which Dr. Cameron had attributed to the milk.

On the motion of Dr. Hayden, the discussion was adjourned to that day week.

Adjourned Special Meeting, Wednesday, May 21, 1879.

James Little, M.D., Vice-President, in the Chair.

The discussion on Dr. Cameron's paper, "On an Epidemic of Fever caused by Infected Milk," was resumed.

Dr. Hayden said he had had no connexion with any of the cases, and he did not know where the dairy in question was. The substance of the paper under discussion might be summed up in three propositions—viz., 1st, that fever of a typhoid character existed in a particular dairy at a particular time; 2nd, that that fever, through the dejecta from the bowels of the persons affected with it, was introduced into the milk supplied to the customers; and 3rd, that through that milk the fever arising from the semina in the milk was distributed through the city. He did not consider that any of those propositions had been established. As to the existence of the fever in the dairy, they had the affirmation of one of the medical men who attended the patients there that the fever under which they laboured was not at all typhoid; that gentleman was himself an eminent author on the subject of fevers. The second medical man who attended them was rather dubious as to the specific character of the fever. There was nothing on the face of the paper to show that they were typhoid; they had none of the characteristic signs. As to the *materies morbi* being carried by the air into the milk, it should be remembered that at the time when those cases were reported to have existed—namely, in December, the ground was covered with snow, and when there was no snow there was sleet or cold rain; and he doubted that there were such currents of air as would have dispersed particles of matter so contaminated through the yard, and carried them into the pails of milk, or up to the udders of the cattle. As to the proposition that typhoid fever was distributed in the milk through the city, and found in a great number of houses during the months of December and January, any person who examined the paper dispassionately would find a great deal warranting him in questioning the evidence, and doubting that that proposition had been established. In connexion with Elgin-road they found six cases in numbers from 1 to 6. "The lady in No. 6," it was stated, "who used the milk, got a low feverish attack at Christmas, but was confined to bed for only a few days; and it was doubtful whether

or not the milk from X.'s dairy was the cause of her illness, but the case was worth noting." It might be worth noting in a general way, but most assuredly in the present connexion it was not, for there was nothing to show that the fever originated by the milk was typhoid. In the cases connected with No. 7, Raglan-road, in which the mother and boy went to the country, and died there in January, 1879, the hypothesis that they took the poison with them from Dublin was converted into a positive affirmation. He questioned the truth of that. It was admitted that the sanitary condition of the residence to which they went in the county of Meath was not satisfactory. As to the case of the medical man in Fitzwilliam-square, he could not see the object of mentioning it, for it was not affirmed either that the gentleman took the milk or that the fever was typhoid. Again, with respect to the case of a child, Dr. Cameron affirmed in the same page of his paper "that he had little doubt, from the illness of the other members of the family, and from the poisonous character of the milk, that the illness was due to it." There, again, what was a mere hypothesis was converted into an affirmation that the milk was poisonous. He did not think that fair. Therefore, while he esteemed his friend Dr. Cameron very highly, and placed the highest estimate upon his laborious investigations into the causes of disease, he did not think that the present paper would enhance his reputation, or advance the interests of medical science in the slightest degree.

Professor William Moore said that Dr. Cameron had alluded to some cases which he (Prof. Moore) had seen in Fitzwilliam-square, and in Burlington- and Northumberland-roads. The nursery-maid in Fitzwilliam-square had enteric fever, and he sent her to Sir Patrick Dun's Hospital. In a few days afterwards he was sent for to see a child of three years of age in the same house, and he might add that that house was as well looked after in a sanitary respect as any other in Dublin. The child had a temperature of 105°, some slight bronchitis and diarrhœa, and convalesced at the end of twelve days. He was also called in to see the brother of that child, a boy aged seven or eight years, who had fever, with high temperature, diarrhœa, but no bronchitis, and in his case the fever went on for thirteen or fourteen days. While he was attending that case another child sickened, and had diarrhœa, bronchitis, and high temperature, and that illness went on for fifteen or sixteen days. None of the children had any spots, but the servant was spotted. The cases in Burlington-road were, first that of a child in a house which, so far as outward appearances were concerned, was perfect as to its sanitary condition. That child had intense diarrhœa, bronchitis, and very high temperature, so much so that very little hopes were entertained of its recovery. It convalesced after eighteen days. During the time the child had fever its mother complained to him of pains and aches. She was in the eighth month of her pregnancy. In a few days she took to her bed, and spots

developed themselves, accompanied with persistent diarrhœa, bronchitis, and temperatures varying from 104° to 105°. She went through the fever, convalesced, and at the end of a month was delivered of a living child. As to the Northumberland-road cases—the girl, who was nineteen or twenty years of age, had diarrhœa, high temperature, and a few spots; unmistakably she had a twenty-one day fever. The housemaid had been sent to the Meath Hospital. The brother of the young lady was convalescing from fever when he was asked to see her. He found it was the same milkman that supplied all the houses. The nursery-maid in Fitzwilliam-square had enteric fever; there could be no mistake about the lady that he saw in Burlington-road; and the same was true with respect to the Northumberland-road case. As to what kind of fever the children had, the best way to arrive at that was by the process of exclusion. He maintained that these were all cases of enteric fever. No one in Dublin was more competent to form an opinion on fever than Dr. Lyons; but while he had told them what the fever was not, he had not told them what the fever was that the proprietor of the dairy had. From what was recorded about the case, he (Professor Moore) believed that it must have been some form of enteric fever.

Dr. J. W. Moore said that four of the cases detailed in Dr. Cameron's paper came directly or indirectly under his notice in December and January last. The most doubtful was that of Mr. Travers Smith, a member of his class in the Meath Hospital, who felt unwell from the 22nd of December. He had a feeling of languor, unusual heat at night, constipation, and severe headache—his pulse being 110 and his temperature 102°. He was unable to apply his mind to anything; he had no eruption, and not much delirium, but the clinical chart showed that his illness ran a course of some three weeks, and that the temperature on one occasion reached 107°. Dr. James Cuming, who attended him in Belfast, said that he certainly used the milk, and that he certainly had fever, but whether it was typhoid fever or not he could not say. Mr. Smith on his return to Dublin came to him (Dr. Moore) and told him of this anomalous fever that he had. It appeared that Mr. Smith used milk from X.'s dairy, and that he was the only member of his family who drank it in a raw state. The second case that he saw was that of Eliza Armstrong, who was admitted into the Meath Hospital on the thirteenth day of an undoubted attack of typhoid fever. She had rose spots and obstinate constipation, and died on the thirty-fourth day of her illness. The third case was that of Ellen Donnell, who was admitted into the Meath Hospital from the house in Upper Mount-street on the 28th of December. In the cases of that patient and of Eliza Armstrong they made the diagnosis of typhoid fever long before they heard of the milk epidemic. Ellen Donnell was admitted on the ninth day of a severe attack of typhoid fever, accompanied with rose spots and moderate

diarrhœa at intervals of three and four days. At the end of four weeks otitis set in, and the left ear discharged freely. Her illness ran to seventy-two days, but she ultimately left the hospital quite well. The fourth case was that of James Byrne, who was admitted into Cork-street Hospital on the 4th of January last, and after being there for fifty-five days was discharged well on the 28th of February. He had a copious eruption of rose spots and a good deal of diarrhœa. These cases fully bore out the diagnosis of typhoid fever.

Dr. Lyons had alluded to the small proportion that the cases attributed by Dr. Cameron to X.'s milk bore to the number of typhoid cases then existing in Dublin; but an examination of the Registrar-General's Returns for eight weeks ending February 8, 1879, showed that during that period the admissions of cases of enteric fever into all the Dublin hospitals numbered 91. Of these 91 cases, 18, or very nearly 20 per cent., occurred in connexion with the outbreak described by Dr. Cameron. But the evidence was still stronger for the three weeks ending January the 11th, 1879. The total number of typhoid cases admitted into all the Dublin hospitals during that period was 45, and of these no fewer than 17, or 38 per cent., were distinctly connected with Dr. Cameron's outbreak.

It was alleged that the fever in the dairy yard was not typhoid at all. He was disposed to accept that fact. The short clinical description given by Dr. Cameron showed that the case of X. himself was typhus, and that those of his two children were probably typhus also. But that raised the whole question of the etiology of typhoid fever. If they accepted the view of Budd that there was only one mode of origin of typhoid fever—namely, the introduction into the human system of a portion of the discharges from the intestines of a typhoid patient, then of course Dr. Cameron's theory fell completely to the ground. But he (Dr. Moore) was not ashamed to confess that he was an ardent disciple of Murchison on this point. He believed that decomposing organic fæcal matter of any kind might give rise independently to typhoid fever, and he thought the whole consensus of evidence was in favour of that view. The very name applied to the disease by Murchison showed that he believed in the *pythogenic* and independent origin of typhoid fever. The origin *de novo* of this fever being granted, they had a simple explanation of the outbreak of the disease due to infected milk from the dairy yard.

Dr. Grimshaw had said that Dr. Cameron gave no details as to the populations of the attacked households. That objection might be overruled, for they found that in those households the drinkers of the milk in a raw state were more severely attacked than the others. Of Dr. Cameron's 66 cases, 44 presumably drank the milk in a raw state. There was positive evidence that 34 of them drank the milk raw. When a local epidemic of typhoid occurred at Islington in 1870, Dr. Ballard

found that it prevailed principally amongst females and young children—in other words, amongst those persons who were most in the habit of using milk. Of Dr. Cameron's 66 cases, 27 occurred in children, 27 in adult females, who were the next largest consumers of milk, and 8 only in adult males, of whom two at least were raw milk drinkers—namely, Mr. Travers Smith and Mr. Lyne, who took a tumbler of X.'s milk every day at his dinner. Dr. Cameron very fairly alluded to the cases in which the milk caused no illness. Only 29 per cent. of the houses supplied with X.'s milk escaped; in 71 per cent. of them the members of the households were attacked with the disease. Looking at the cases in which the milk caused no illness, they found that in the first house the milk was only used in tea, very seldom in cooking, and that there were no children. In the second house the milk was taken cooked and uncooked by four or five persons, none of whom were young, and most of whom had gone through typhoid fever four and a half years before. In the third house the milk was taken cooked and uncooked by a family in which there were no children, and in the fourth house the whole family drank the milk raw and cooked until it was known that fever was in the vendor's family. That was in the latter part of January, and that house escaped, although no protective influence was at work.

It appeared to him that there were some peculiar characteristics in the epidemic which were not found in ordinary cases of typhoid. First, there was the absence of the rash in a good many cases; but this was notably an inconstant symptom. Murchison, basing his statement on an experience of 5,988 cases of typhoid fever, said that the rash was present in only 77 per cent. of them. Next, as to the inconstancy of the diarrhœa, Murchison stated that it was present in 93 per cent. of his cases, but added that a more extended experience led him to believe it was absent in fully one-fifth of the total cases. In the third place, the pyæmic complications and sequelæ that occurred in many of Dr. Cameron's cases gave this epidemic a distinctive character. In the case of the young girl at the Meath Hospital, the resulting pyæmic complications were remarkable. In Dr. Ringwood's cases also the fact had been overlooked by preceding speakers that Dr. Ringwood at once came to the conclusion that the patients under his care were poisoned through the milk.

With respect to the second illness of X., his opinion was that it was undoubtedly typhoid. During his first illness—an attack of typhus fever—X. drank the milk from his own dairy, and he (Dr. Moore) had little doubt that it was in that way that X. contracted typhoid fever—he was in fact himself one of the victims of the milk outbreak which Dr. Cameron had so well described.

Dr. Nixon said—The question raised in Dr. Cameron's paper is of such importance that, although I have not had the advantage of hearing

the prolonged discussion which it has evoked, still, from my experience as a hospital physician, I feel it my duty to give my independent view as to its value. Starting, I presume, from the well-ascertained fact of the remarkable powers possessed by milk of absorption of vapours, and of undergoing rapid fermentative, or zymotic changes, when mixed with putrifying animal matter, Dr. Cameron holds that an epidemic of typhoid fever was produced by the presence in milk of the actual particles of the dejecta of a patient suffering from this disease. He states his belief that the *materies morbi* passed into the milk in the same way as elements of disease pass by the agency of sewer gases into water; that in the confined space in which the dairy operations were performed the air wafted gases impregnated with minute particles of excremental matter into the milk. A number of cases of typhoid fever, presumably due to the use of the infected milk, is then recorded. Dealing strictly with the propositions advanced in the paper two questions appear to be raised:—(1) Did typhoid or other poisonous matter exist in the milk, and, if so, how did it get there? (2.) Were the instances of disease alleged to have been produced by infected milk cases of enteric fever? With reference to the first point a curious want of concordance of opinion exists. The writer of the paper states that on the 15th of December last a child of the proprietor of the dairy was seen for the first time by a physician, and that she had a gastric attack without diarrhœa or rash. Dr. Cameron states his positive opinion that this girl suffered from typhoid fever. A short time afterwards a little boy gets ill at the dairy. He has symptoms of cerebro-spinal meningitis; no diarrhœa or rash; and subsequently the father of the children passed through well-marked typhus, followed by a low form of fever, ending in double pneumonia, and accompanied by a few rose spots. There existed neither delirium nor diarrhœa. These two cases are regarded as undoubtedly typhoid in their nature. Now, from the account given, the only distinctive sign of typhoid fever present in any of the cases was the existence of a few rose spots upon the father. Of all the signs of typhoid fever this is the one which, I believe, is most likely to lead to an error of diagnosis. We know that Louis mentioned their presence in cases of phthisis, and sometime afterwards he acknowledged that he mistook pimples upon the skin for rose spots. But whilst the evidence adduced by Dr. Cameron as to the existence of this special type of fever is so unconvincing, the consulting physician in charge states positively that none of the cases were typhoid fever. I am certainly of opinion that some value should be attached to the diagnosis of disease made at the bedside, and I feel bound to place more reliance upon the statement of the physician in actual attendance on the cases—one of high standing, and well known from his researches upon the special subject of fever—to the speculative opinion of one who, whilst anxious, no doubt with perfect *bona fides*, to prove an assumed proposition, has not personally been

brought in contact with the disease, the nature of which he is investigating.

It does not, however, dismiss Dr. Cameron's view as to the origin of the fever from polluted milk to show that the special virus of typhoid fever did not pass into it. Some of the highest authorities admit the origin of enteric fever *de novo;* that in exceptional cases decomposing sewage or putrifying animal matter may produce it without the presence of the special contagia. Fully granting the impossibility of proving a negative, cases of typhoid fever have originated without there being any reason whatever for assuming the existence of the typhoid virus. It appears to me, however, to be quite an open question as to the milk in this instance being infected with decomposing animal excreta. According to Dr. Cameron the sanitary condition of the dairy was bad, and it may be that during the confusion attendant upon the presence of illness in the household there was not sufficient cleanliness with regard to the vessels. I should be disposed to hold that if the milk became polluted it did so by the actual contact of excremental matter during the performance of dairy and domestic operations. Taking this view, the hypothesis of the pollution of milk in the same way as that of water through the agency of gases would be unnecessary. I cannot pass from this point without asking Dr. Cameron if he believes the presence in the milk of typhoid matter derived from the excreta of the girl ill at the dairy in November caused an epidemic of fever, how does he connect the occurrence of the small typhoid outbreak in October with the milk from the dairy in question?

It would occupy too much of the time of the Society to analyse the reports of the different cases alluded to in Dr. Cameron's paper. I may remark, however, that out of the 67 cases of illness, judging from the negative evidence adduced as to their nature, a very small proportion of them can be said to have been instances of typhoid fever. I say this in the absence of any proof being afforded that cases of continued fever without spots, diarrhœa, or other signs of intestinal irritation, are enteric in their nature. I quite admit that in epidemics of typhoid fever cases of an anomalous nature occur, cases which but for the presence of the epidemic influence would scarcely be regarded as enteric in their nature. But these cases are the exception, and I am not sure but that this tendency to attach great value to epidemic influence leads us occasionally to make diagnoses of states that have no existence. We believe a certain form of disease to be present, but it may be a case of Hamlet being played without the appearance of the historic prince. My own observation of fever leads me to believe in the existence of a special type, not typhoid in its nature, and of much longer duration than cases of febricula, or simple continued fever. I saw such cases when a student, and I heard my teachers relegating them to the class of nondescript

fevers. I see no reason why the name "asthenic simple fever" should not be generally adopted. The prominent features of such cases are malaise, great languor, slightly coated tongue, confined bowels, rapid pulse, headache, disturbed sleep, and progressive prostration. Reading over the cases of fever described by Dr. Cameron, I cannot help thinking that most of them belong altogether to this type. In many of the cases noted I do not think sufficient data are afforded to warrant any diagnosis being formed, as, for instance, in Cases I. and III. in Fitzwilliam-square, and Case III. in Mount-street. In the last we are told that a child had been treated for gastric fever, which ran into tubercular meningitis. Are we to look upon this case as one of typhoid fever aborting in meningitis, overlooking the fact that the most common of the prodromal symptoms of the latter is gastric disturbance? My object in alluding to some of the cases is to show that insufficient grounds exist for admitting the great majority of them to be cases of typhoid fever, whilst many of them closely resemble either cases of simple continued fever, or the adynamic simple fever of Murchison. Some, no doubt, were cases of genuine enteric fever, but we must bear in mind that during the months of October, November, December, and January a large number of cases of enteric fever occurred in Dublin, which could have no possible connexion with the milk from X.'s dairy. In the Mater Misericordiæ Hospital during the months of October, November, and December of last year 65 cases of well-marked enteric fever were admitted, besides a large number of cases of simple continued fever having the same characteristics as most of Dr. Cameron's recorded cases. The chief features of the typhoid epidemic, judging from the cases in hospital, were severe diarrhœa and intestinal hæmorrhage, the latter of the late variety, and often serious from the amount of blood lost. Although anomalous cases occur in all epidemics, still they are the exception, and I would suggest to Dr. Cameron to calculate the probabilities that out of any 67 selected cases of fever so large a proportion would present such unusual characters as those recorded by him. The idea that the non-diarrhœal nature of the poison produced a non-diarrhœal epidemic seems like a revival of the old "doctrine of signatures" which for so long a time helped to bring medicine into ridicule. It is a fallacy of argument specially indulged in when questions of contagion arise, and is expressed by the assumed law "that the conditions of a phenomenon must, or at least will, resemble the phenomenon itself." We should, therefore, in analysing the cases noted—firstly, satisfy ourselves as to their nature; and, secondly, carefully bear in mind the possible existence of other causes more potent than impure milk in producing a typhoid outbreak. Indeed, the writer of the paper fully admits that in some of the well-defined cases of fever the sanitary condition of the houses in which it occurred was very bad.

With respect to the mathematical proof that the milk from X.'s dairy

caused the epidemic, a fundamental requisite appears to be absent. To apply the doctrine of chances to the solution of any scientific problem, it is necessary to ascertain first the limit of all positive information concerning the subject. We cannot assume that a number of individuals or objects agree or differ, save in one particular, until we have made ourselves fully acquainted with their points of resemblance or difference. Nor are we justified in selecting any single cause for the occurrence of a disease when a pleurality of causes may exist, unless we can show that the conjunction of cause and effect is not alone constant—but that all circumstances except this one capable of producing a result may be eliminated. It is not legitimate to premise that all the people living in the various streets where illness occurred were under similar conditions, except as regards their milk supply; that their water supply, their sanitary accommodation, their habits of life, &c., were similar. Nor is it right to assume whilst cases of any special disease were occurring with moderate frequency, any section of the community would be influenced only by a purely local cause. I do not say it would be possible in this particular instance to obtain the precise information that would be desirable, but it is certain that its absence vitiates the calculus of probabilities, and makes its application just as uncertain as it is in testing the credibility of witnesses or the correctness of the verdicts of juries. The theory of probabilities depends upon data of a more certain character and of wider scope than that furnished in this particular question. We should not attribute every case of illness, trivial or grave, to the use of impure milk, to the exclusion of all other causes, nor should we overlook the possible occurrence of illness in households which are supplied with milk from sources different to the one specially indicated.

In conclusion, Sir, I would say that there is no evidence whatever of the pollution of milk with the virus of typhoid fever. Dr. Cameron's argument from the start seems to envolve a *petitio principii*. The test of the fallacy is supplied by his reasoning in a circle. He states that because there was typhoid poison in the milk there was an epidemic of typhoid fever, and then he is driven to argue that because there was typhoid fever there must have been typhoid poison in the milk. In one case there is a complete absence of proof as to a matter of fact, and in the other the more generally recognised causes of enteric fever are excluded from consideration.

I am not prepared to say that none of the cases of illness recorded were due to the use of milk containing sewage or other impurities just as malaise, fever, and prostration may be produced by drinking bad water or breathing foul air, but to the question of an epidemic of typhoid fever, arising from this cause, I would certainly return the Scotch verdict of "not proven."

Dr. M'Clintock said that as he saw one of the cases he might be

allowed to make a remark. The drift of Dr. Cameron's paper was that a certain proportion of the persons supplied with the milk in question were attacked with fever of the nature of typhoid, and which, from the want of a better adjective—and he (Dr. M'Clintock) was very glad to adopt the adjective he had used—Dr. Cameron called "typhoidal." That word was equivalent to Dr. Nixon's phrase "nondescript," and meant a fever having some relation in appearance and symptoms to typhoid. The word "typhoid" itself originally meant a fever having some resemblance to typhus, though it was now used in a more definite sense. Such was the main point of Dr. Cameron's paper; and none of the speakers, except Dr. Nixon, had addressed themselves to it. In fourteen out of twenty-five households supplied from the dairy in question fever attacked thirty-one persons within a fortnight; while in ninety-five households supplied with milk from other sources, not a single case of fever or serious illness of any kind occurred during the months of December and January. Would anyone say that that was a mere coincidence? Until those facts were overturned Dr. Cameron's paper must stand. It was quite unimportant whether the fever that X. and his children had was typhoid or typhus, or gastric, or enteric, or nondescript. With respect to the house in which the case occurred that was under his care he made inquiries. There were six adults in it—namely, three maid-servants, a man-servant, the head of the house, his wife, and two children. Every person in it got fever of a typhoid or typhoidal character; he would not put himself down to a precise diagnosis. The three maid-servants all used the milk uncooked; they got the fever and were sent to the Mater Misericordiæ Hospital and treated there. The master had been in the habit of taking the milk with soda water and of also using it in tea; the two children used the milk; and both got gastric fever, as he would call it. The parents suspected the milk and stopped taking it; and during the whole time of his attendance there the supply of milk for the house was derived from the cow of a friend in Merrion-square. The children recovered. The only person who completely escaped was the lady of the house, who was five or six months in the family-way at the time. She nursed her husband, went her full time of pregnancy, and was confined naturally. He particularly inquired did she drink the milk, and she said she did largely, but never until it had been boiled.

Dr. Hawtrey Benson remarked that before the matter was brought forward the cases in X.'s house were called typhoid fever. After it was brought forward they were not called typhoid fever. But the fact was undoubted that there was fever in X.'s house, and the main point was—was it communicated? The statistical evidence in Dr. Cameron's paper was enough to show that it was.

Dr. Chapman said there could be no doubt that fever was exceedingly prevalent in Pembroke Township, including Raglan-road, Elgin-

road, and Clyde-road about the time referred to by Dr. Cameron. It had been prevalent there for several years; and it was well known to many gentlemen in that room that the neighbourhood had been a focus of typhoid fever for a long time. Dr. Cameron himself had referred to the existence of that type of fever there previous to the occurrence of the cases mentioned in his paper. Typhoid fever was prevalent there in July. He (Dr. Chapman) was then Medical Sanitary Officer, and on the 2nd of August, 1878, sent a report to the sanitary authorities asking them to take some steps in reference to that particular neighbourhood, and to have the houses and the sewers connected with them examined. The surveyor reported that the sewers were all right, but that he had not been able to examine all the houses. Dr. Cameron had told them that he (Dr. Chapman) had twenty-seven cases. That was accurate. Thirteen of them occurred in the month of December, and five in January. Only two out of the eighteen that occurred in those two months drank the milk from X.'s dairy. From the 20th of May, 1878, to the 1st of August, 1879, there were eighteen deaths registered in Pembroke Township from typhoid fever. These facts proved conclusively that typhoid fever was prevalent in the neighbourhood for a considerable time before Dr. Cameron's cases occurred. In December and January, however, there was a decided increase in the number of cases. On the 16th of January he sent in a report to the sanitary authorities recommending, amongst other things, that the sanitary condition of the houses should be particularly examined. He adverted to all the points that he thought required attention, and suggested that inquiry should be made as to the persons who supplied the milk. The people living in Elgin- and Raglan-roads were afterwards put to considerable expense, and they blamed him (Dr. Chapman) for it. In the case of No. 1, Elgin-road the sanitary arrangements of the house were exceedingly bad, and all the children had been drinking water from a large tank, which was open and placed over the water-closet; and he had not the slightest doubt that the water in that tank was not right. As to the cases in No. 1 and No. 3, Dr. Grimshaw concurred with him that the cases were typhoid. Fifty houses were examined out of 103 on the roads mentioned, and every one of them except five were found to have very serious sanitary defects, dangerous to health. Of the five, the defects in three were afterwards remedied in consequence of the recent occurrence of typhoid illness in them. Not a single house in Pembroke Township was examined in which serious sanitary defects were not found. It would be wrong, therefore, to say that the milk caused all the illness; it might have caused some of it but not all. The disease might have originated otherwise. They knew that the sanitary condition of the houses in Dublin was far from what it ought to be. On the other hand, almost every resident in the township seemed to be under the impression that the house he lived in

was perfect as to its arrangements. In one case, in which the landlord declared that his house was perfectly right, twenty distinct and serious sanitary defects were found to exist. These facts were worthy of note. At the same time he thought there was something more than accident in the way in which the persons who used X.'s milk had been attacked.

Dr. Doyle said he would like to know had the cows in X.'s dairy been examined. He had under his charge on one occasion two cases of typhoid fever—a man and a child—who got it from drinking the milk of a goat that was suffering from disease. The man had got the goat from persons who were suffering from typhoid fever. The milk of the goat was of a reddish colour.

After some remarks from Drs. MacSwiney, Charles F. Moore, and Henry Kennedy,

Dr. Kelly said he wished to mention a case that fell under his own observation. Last July he attended a milkman for a fever, which he considered to be typhoid. The milkman's dairy was a short distance from his house, and the milk was brought to his house to be distributed. The peculiarities in his case were the extreme length of the fever, which continued for five or six weeks; that he was free from diarrhœa, but had a continuation of rose spots all through; and that his throat was in a most congested state—so much so that he thought he had some form of mortification or gangrene of the soft palate. This man supplied milk to an institution in which fifteen cases of fever occurred. He made inquiry as to the form of that fever, and found that its characteristics were the same as in the case of the milkman.

The Chairman said the first question was, were the cases in X.'s house typhoid fever? He thought the cases of the father and the child were distinct, and that the child had had typhoid fever. With respect to Dr. Cameron's sixty-six cases he was unwilling to use such an adjective as "typhoidal," because such adjectives generally covered a weak diagnosis. At the same time it should be recollected that Dr. Cameron was not the clinical physician attending the cases, but had to get his information at second-hand, and, therefore, he was right in using a vague term when he had only hearsay information. A great number of his cases did not present the typical phenomena of typhoid fever; but it was admitted on all hands that the typhoid poison was capable of producing symptoms of every degree of intensity, from very slight to very severe; therefore, it did not invalidate his argument to show that those cases did not present the typical phenomena of typhoid fever. The cases that were under the care of Dr. Ringwood reminded him of the cases of the late Professor Morgan and his daughter, that occurred in this city. In both cases the diagnosis of typhoid fever was verified by Mr. Richardson and himself by *post mortem* examination. As to the connexion between Dr. Cameron's sixty-six cases and the cases in X.'s house it had

been thought that if the connexion between X.'s house and particular cases were shown to be weak, the connexion with the rest was proved not to exist. But that was a fallacy. If the proposition were that the fever spread through a number of persons, like links of a chain, to a particular person, on its being shown that there was no connexion between any two of those persons the chain was broken. But here a number of persons were separately in communication with this man, and all got typhoid fever. Dr. Lyons had said that he had been very much refreshed by X.'s milk, and that he had not got typhoid fever; therefore, he argued, there was no contagion in it. As well might they argue that there was no contagion in smallpox because physicians in smallpox hospitals did not get it.

Dr. Cameron, in reply, said that not a single one of the statements that he had made in his paper had been substantially rebutted. It was no part of his case to prove the precise nature of the fever that occurred in the dairy. He paid very little attention to X.'s illness, because many of his customers were previously down with the same kind of fever. He attributed the origin of the epidemic to the case of the little girl. The very day he made the discovery of so many persons in households which were supplied with milk from X.'s dairy having got fever, he met his friend, Dr. Harley, who told him that the little girl had been ill for a fortnight with gastric fever. Now, most physicians look on gastric fever as closely allied to typhoid fever, if it be not absolutely identical. Might there not be some very slight forms of typhoid fever which might pass under the name of gastric fever, but the contagium of which might be capable of inducing in other persons most virulent forms of typhoid fever? Therefore, he thought he might be allowed to use the term "typhoidal." As a sanitarian he was satisfied that there was either typhoid or typhoidal fever in X.'s house in December. Then he found a most unsatisfactory state of things existing in the dairy, and such as had not been noticed in the outbreaks recorded by Ballard or Russell. Out of the cases recorded in his (Dr. Cameron's paper) forty or fifty were cases of acknowledged typhoid fever, while the remaining twenty or so had some kind of low fever of an indefinite character. All had *some* kind of fever. A good deal had been said as to the unsanitary condition of the houses. He agreed with Dr. Chapman that they were all in a bad condition. But, when they were all so, could it have been a mere accident that all the houses in which fevers occurred were supplied from X.'s dairy? A great deal had been said, too, as to the enormous amount of typhoid fever then prevailing in Dublin. One would think, from what had been said on that point, that Dublin was like London in the time of the plague. He had the official report of the sanitary authorities of Pembroke Township, and he looked in vain in it for that terrible state of things. He had a list of all the houses in Elgin-

road and Raglan-road in which fever was reported to have occurred for the last two years, and he found that only one or two cases had occurred in those two roads which were not connected with the milk from X.'s dairy. Dr. Hayden had only picked out the cases that were not of a marked typhoid character, without accounting for the others. It was not possible for him (Dr. Cameron) to take a forcible census of every house into which the milk in question went; but he had found out forty-two houses supplied by X., and he could not have supplied many more because he had only fourteen cows, and some of the houses took from five to ten gallons a week. Out of the forty-two houses fever occurred in no less than thirty. Since he brought forward this matter he found that the only house on Burlington road in which fever occured during the latter part of the year was supplied with milk by X. Mr. Maguire examined the house and found nothing wrong with it. The child who got ill was living in a large, airy nursery, at the top of the house. With respect to the cases in 11, Fitzwilliam-square, the sanitary arrangements of the house were most perfect; yet three of the children living in the house who used X.'s milk raw got fever, which Professor Moore said was typhoid. The other two children, who drank the milk cooked, remained perfectly well. There were only four houses attacked in Fitzwilliam-square during two months, and X. supplied only those four with milk. With respect to Dr. Doyle's question, he (Dr. Cameron) most carefully examined X.'s cows, and found them to be perfectly healthy.

The Society then adjourned.

IODINE IN INTERMITTENT FEVER.

Dr. J. Wadsworth, who practises in Mexico, where periodical fevers are endemic, corroborates the conclusion of Dr. Willibrand (*Virchow's Arch.* XLVII., 243), that in iodine we possess a specific remedy for malarial diseases equal to cinchona, and in one respect superior, since fewer relapses occur in cases of cure effected. During a recent very severe epidemic, Dr. Wadsworth treated over three hundred cases of intermittent fever in four months. In the severe cases from ten to fifteen grains of quinine, in two doses, were generally given during the *apyrexia*, and immediately followed by tincture of iodine in doses of from ten to fifteen minims thrice daily. In the severest cases it was combined with liquor arsenicalis. In every case the paroxysm was arrested within twenty-four hours, and twelve doses, lasting four days, were sufficient to guarantee the cure, with the exception of eight relapses.—*N. Y. Med. Journal*, May.

PROCEEDINGS OF THE PATHOLOGICAL SOCIETY OF DUBLIN.

President—William Moore, M.D.
Secretary—E. H. Bennett, M.D.

Fracture of the Femur beneath the Trochanters simulating Dislocation of the Hip.—Dr. Bennett said: These three casts and the accompanying specimen are obtained from the same subject as that from which the scapula, just now presented by Dr. T. E. Little,[a] was taken. As the body lay on the table, after being received into the dissecting-room, the deformity caught my eye. The cast represents the deformed limb in the position of most extreme outward rotation. I could not, without causing a fresh fracture, place the thigh in a position such that the patella should face outwards. Lying at what seemed its natural position, the anterior surface of the patella was directed towards the inside of the opposite thigh. The appearance of the hip is seen in the second cast, viewed from the outside. On examining the limb I found the motions perfect in every respect, except that they were limited with regard to rotation outwards. I could flex the thigh or adduct it, but in abduction or rotation outwards, I could go no further than the position seen in the cast. On measuring the limb, I found two and a quarter inches of shortening, which is extreme for any luxation or fracture of the hip. The limb was pretty well nourished, with the exception of a slight amount of thinning and wasting of the lower part of the thigh; and the limb seemed to have been actively used a short time before death, or, at all events, not to have been in a condition of extreme wasting. The feature of the case involving the greatest difficulty is represented in the second cast. When I examined the hip from its outer aspect, I found a tumour behind what appeared to be the trochanteric region of the hip, and in the neighbourhood of the sciatic notch, or projecting towards it. It was globular, and accompanied the limb in all its movements, flexions, and extensions. It appeared to be part of the thigh bone, and was connected to it very much in the direction of the normal axis of the head and neck of the bone, assuming it to be a case of dislocation. In addition to the shortening and inversion of the limb, there was, therefore, present a condition which is most characteristic of dislocation backwards—a tumour in the gluteal region, which rotates with the femur. In the absence of any history of the case, it was extremely difficult to make an exact diagnosis as to what was the condition of affairs. Three views presented themselves—one being that there existed a dislocation backwards towards the sciatic

[a] See Dublin Journal of Med. Science. Vol. LXVII. June, 1879. Page 547.

notch, or on the dorsum ilii; another, that the case was an abnormal congenital dislocation; and a third, that it was a fracture of the upper end of the thigh bone. It was not until after I had dissected the specimen that I was able to satisfy myself as to the exact nature of the injury. I was rather inclined to the idea that there was a dislocation; but on measuring the femur from what appeared to be the trochanter to the condyle, and comparing this measurement with that part of the opposite bone, I found that it was nearly two inches shorter. This, together with the unwasted hip and limb was suggestive of congenital dislocation, while, of course, it was consistent with the diagnosis of fracture. When I made the dissection, on raising the gluteus maximus, I found that this tumour, which existed posteriorly, was not formed by the head of the femur, but was the great trochanter. The superior extremity of it looks directly back. The upper margin of the trochanter appears to be at right angles with the shaft. It was then clear that I was dealing with a fracture of the femur; and, on further dissection, I found this fracture to be placed immediately beneath the less trochanter. The greater and the less trochanter are free from any lesion, being normal in every respect. There is extremely little callus; except at the prominence of the angle, it is almost a minimum. The callus is so recent and the periosteum so succulent that it is probable that the fracture occurred not very long before death—it possibly did not date more than a few months before his death. At all events, the condition of the callus shows that the fracture could not have occurred during childhood. The fractured surfaces seem to be nearly transverse with reference to the long axis of the femur. It was a dentated fracture, but the general direction of the surfaces was transverse. This is another point of interest in the specimen, for, out of fourteen specimens recorded by Malgaigne, eleven were oblique; and in our collections in Dublin, rich as they are in fractures of the femur, and particularly in fractures beneath the trochanters, there does not occur a single specimen of transverse lesion such as this case presents. The angle formed by the fragments, which is salient directly outwards, is nearly a right angle, the upper fragment being, as it were, thrust outwards, directly by the pressure of the lower.—*January* 28, 1879.

Intestinal Obstruction from Disease of the Cæcum.—Dr. Bennett said: These are the parts involved in a case of intestinal obstruction which presented some features of interest, chiefly in the fact that the physical signs during life suggested intussusception as the cause of obstruction, while in reality the condition is quite distinct from this disease. The patient was a young man, twenty-five years of age, and married. I do not know anything exactly of his history previous to his fatal illness—nothing in fact, except that he, being a painter, suffered as was thought from slight lead colic. Eight days before his death he

suddenly sickened and was attacked with great pain in the abdomen, over the right iliac fossa. He was under the care of a medical practitioner for a week. He was admitted into the hospital on the seventh evening of his illness. The resident surgeon considered that he was dying; and, in fact, he was so low that it was not possible that any interference of any kind could be attempted. However, he asked me to see the case. Having another engagement at the time I was not able to see the case until between nine and ten o'clock at night. When I saw the man then he had an extremely cadaveric aspect; his eyes were sunken, with deep-blue shadows round them, and, at the first glance, one would have almost supposed that he was dead. He very soon woke up from this momentary condition of almost apparent death, and writhed about in the bed. He was greatly distended. He was a thin, spare man, of fair complexion, and his abdomen was as tight as it could possibly be without the skin giving way. Coils of the intestine could be distinctly seen sweeping round the abdomen; and, in particular, a long coil passed up from the right iliac fossa and took the course of the colon all across the epigastrium and down to the opposite side. Whatever the obstruction was it appeared from the course of this great loop of intestine that the colon was distended with gas. This was entirely a misleading appearance. The unusual accident of a loop of the small intestine taking the course of the colon served to complicate the diagnosis. Seeing this course of the intestine, it occurred to me—as there was no external appearance of a hernia—that the obstruction might possibly be caused by intussusception of the colon. With this view I made an examination of the rectum. Here was another fact which was extremely deceiving. On passing my finger into the rectum as far as I could reach, I distinctly felt a tumour extending obliquely across from the right side of the true pelvis and down towards the anus; and, on pressing it with my finger, I detected a deep dimple, into which I could press very distinctly, with a rim or margin round it. This feature made me suspect that I was dealing with a case of intussusception. The patient strained constantly while the examination was being made, and at each effort of the abdominal muscles the tumour was forced down and retreated again as the paroxysm yielded. One point made me doubtful as to the diagnosis of intussusception: the direction of the projection should be towards the sacrum; it was, however, directed forwards and distinctly to the right side. Not relying on that position as being absolutely conclusive against its being an intussusception, I took two or three varieties of catheter and made attempts to discover the opening. Each attempt made me more and more certain that there was a membrane laid over it, and that the tumour was external to the rectum and not within it, and that it was, in fact, outside my reach, unless I passed through the walls of the rectum. I could pass no long tube or catheter into the colon; why, I do not know,

but probably the principal cause was that the colon was entirely empty and the abdominal pressure extreme, so that the empty colon and the sigmoid flexure were compressed to a great degree by the small intestines. Failing in that effort to reach it, if it were an intussusception, and seeing that any prolongation of the attempt would accelerate death, which was imminent, I abandoned the idea of passing the tube. As the man was in great distress I punctured him with the finest needle of an aspirator. I punctured what I took to be the colon in the middle line. A stream of gas escaped, and we had to stand by for somewhere between fifteen and twenty minutes while it was escaping. The needle being a very fine one, the escape was slow. Gradually the abdomen became soft and the patient was relieved, and he said that if we would let him alone he would go to sleep. As soon as the gas ceased to come off I withdrew the needle, after shifting it once or twice. The patient expressed the greatest possible relief. I left him at half-past twelve at night, and he died at four in the morning, apparently never having roused out of the sort of lethargy into which he had lapsed after the relief given by the puncturing. I was, unfortunately, not able to make a satisfactory *post mortem* examination. I made a limited incision in the abdomen, but found that without extending it the whole length it was impossible to search for the obstruction. The size of the small intestines was the greatest I had ever seen. You will admit that the portion of it I present is in its collapsed condition even still of great size. The whole of this is the cylinder of the small intestine. The coils were fully as large as the rounded part of the forearm, and were distended in the lower part of the abdomen with homogeneous contents—yellow, and moderately feculent. I was obliged to evacuate the contents of one or two coils in order to enable me to search for the obstruction. On opening the abdomen a great gush of gas escaped from the incision, having been free in the peritoneal cavity. No wound of the intestine caused this; and I am satisfied that, after death at all events, the peritoneal cavity was distended with gas. This I take to be due to an escape of gas from the intestine through the puncture, small as it was. I mention this because, although puncturing may give relief, the patient runs a very fair chance of being killed by this escape of gas into the peritoneum. There was also present distinct evidence of peritonitis, which had not been caused by the puncturing, but must have existed previously, for the flocculi of lymph on the intestines had to be torn asunder, the connexion between them being firm and distinct. As soon as I got room for examination by puncturing one or two coils and letting the contents off, I discovered the obstruction. A great loop of intestine, which is enormously hypertrophied, led down directly to the obstruction—the hypertrophy of the walls is, in fact, as excessive as its own unnatural size. I do not know that I have ever seen the small intestine with the longi-

tudinal and circular fibres so extremely well shown as they are seen here. It is clear that this obstruction was of some standing, and that it had caused a great amount of obstruction long before the final occlusion. Tracing onwards the intestine I came to the colon above the cæcum, perfectly empty and collapsed. I isolated a good piece of the ascending colon, ligatured it, and removed the mesentery; this, too, was extremely long. The mass which formed the obstruction was movable over the upper outlet of the pelvis. Filling as it did the region of the junction of the great and the small intestine, it is evident what the tumour was that I felt during life, and how it gave the false idea of intussusception. There is a hardened ring with a soft depression in the centre, and this was pushed downwards, in consequence of the emptiness of the colon, and was pushed into the pelvis more than one can imagine without seeing the distended condition of the small intestines above. This, then, was the tumour I felt during life. I examined the mass of intestines, but found them perfectly healthy elsewhere. On laying open the small intestine and passing a probe or catheter—which I did with difficulty—through the ileo-cæcal region, I entered the colon. Whatever the pathological change is, the disease originally started in the cæcum, destroyed it, and caused its shrinking up. We see no trace of the vermiform appendix. The colon passes directly to the ileum. In the lower portion of the ileum there is a large ragged ulcer with vascular sides, very doubtful in character; but though it leads into the submucous tissue the muscular coats have not been perforated. The ileo-colic valve is represented by a ragged, ulcerated piece of tissue; it seems to have been destroyed by an ulcerative process, and there is what looks like the remains of a polypus projecting into the intestine. The ileo-colic valve is puckered, shortened, and has extremely sharp edges. The whole of the base of the mass forming the obstruction is extremely hard. Over the external surface of it are a number of clear bodies which look at first sight as if they were lymphatic glands involved in some pathological change; but that idea, I think, is erroneous. I cut into one of these white glistening bodies, and there came out matter resembling the vitreous humour of the eye, and leaving behind a perfectly smooth cyst. I thought they were colloid cysts, and they are so, in so far as the contents are glue-like. On examining the contents of one of those cysts, however, I ascertained that it consisted of nothing but inspissated mucus, with some *débris* of epithelial cells, but no organised tissue, such as colloid cancer would produce. Like as the glue-like fluid is to that occurring in some forms of colloid cancer, I am clear that this is not colloid cancer. The base of the ulcer is extremely hard and firm, and almost gives the idea of a scirrhous cicatrix. I have made a partial examination of the lips of the ulcer, but am unable to decide, with anything like certainty, its nature—the softness of the tissue and the mixture of epithelial *débris* are such that it would be foolish at present to

hazard a positive opinion as to whether it is a cancerous ulcer, or some form of chronic ulceration of a non-malignant character passing into the cicatricial stage. On examining the clear jelly expressed from the cysts, I found in it abundance of crystals perfectly formed of the ammonio-magnesian phosphate. The cysts were not contaminated by peritoneal fluid, nor was there any urinary extravasation. I should have noticed that there are some glands of the mesentery that are enlarged, but not to the degree that one would call cancerous. The interest of the case lies in the deceiving elements as to the cause of the intestinal obstruction—the deceiving elements of the loop of intestine taking the place of the colon, and of the fact of the finger feeling what had the features, to some extent, and the feel, certainly, of an intussusception; and in the distension of the peritoneum, caused probably by the gas freed by the puncture.—*February* 8, 1879.

ULCERATION OF THE CERVIX.

Dr. Suesserott, writing to the *N. Y. Med. Record*, May 10th, says that in cases of ulceration of the cervix uteri there is no one thing that he has applied that gives as much relief as a thick cream of subnitrate of bismuth, mixed in pure glycerine. He describes its mode of application as follows:—I have a glass tube, a little longer than, and sufficiently small to pass into, an ordinary reflecting glass speculum. I take a pledget of absorbing cotton, on to which I have tightly looped a cord of sufficient length to project beyond the vulva, when the cotton is in contact with the womb. Having passed the cord through the tube, I draw the cotton in to the extent of an inch or two, so as to have sufficient space for whatever quantity of bismuth and glycerine, tannin, aloes, or whatever I am about to introduce within the vagina. The speculum, having been properly applied, so as to bring the ulcerated surface within view, I next insert the tube, with its contents, within the speculum, and with a wire-probe, armed with a disc of metal about three-fourths the diameter of the tube, I press the cotton to its place, withdrawing the tube and holding the application *in situ* until the speculum is partially removed. As soon as the walls of the vagina fall over the cotton, the probe may be taken away, and the medicament is just at the spot desired. My custom is to allow it to remain for thirty-six or forty-eight hours, when the cotton is easily removed by means of the cord by the patient herself. After removal I recommend an injection of a saturated solution of borax or slightly diluted whiskey, once or twice a day for two days, when I make another application. If the pledget of cotton is too large it will not remain in place as well as a smaller one; but this must be determined by the judgment of the operator.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, M.D., F.K.Q.C.P.

Vital Statistics

Of Eight Large Towns in Ireland, for Four Weeks ending Saturday, June 14, 1879.

Towns	Population in 1871	Births Registered	Deaths Registered	Deaths from Zymotic Diseases							Annual Rate of Mortality per 1,000 Inhabitants
				Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhœa	
Dublin, -	314,666	791	1,009	51	17	29	4	6	24	17	41·7
Belfast, -	182,082	543	405	—	3	1	—	43	15	16	29·3
Cork, -	91,965	227	201	—	—	2	—	—	8	1	28·3
Limerick, -	44,209	98	114	—	—	—	—	1	4	4	33·5
Derry, -	30,884	73	49	—	—	—	2	—	1	1	20·5
Waterford, -	30,626	82	67	—	—	—	1	—	1	2	28·5
Galway, -	19,692	54	34	—	—	—	—	—	5	—	22·8
Sligo, -	17,285	21	25	—	—	—	—	—	1	2	18·8

Remarks.

The registered death-rate was excessive in Dublin; very high in Limerick, Belfast, Waterford, and Cork; moderate or low in the remaining towns. It was 20·3 per 1,000 of the population annually in London, 22·0 in Edinburgh, and 20·8 in Glasgow. Omitting the deaths of persons admitted into public institutions from localities outside the registration district, the death-rate in the Dublin district was 40·2 per 1,000, while within the municipal boundary it was 43·4 per 1,000. These unusually high rates of mortality are largely owing to the circumstance that 293 deaths of persons interred in the several Dublin cemeteries during the first four months of the present year were registered for the first time in the last three weeks of the period now under consideration. These deaths, which form 29 per cent. of the total deaths registered during the period, came to the knowledge of the District Registrars by means of the Returns of Burials which are now obtained under the provisions of sec. 191 of the "Public Health (Ireland) Act, 1878." This late registration precludes a fair comparison with results in previous four-week periods; but henceforth the Cemetery Returns will be furnished monthly, and

they cannot fail to tend to the completeness of the Registration of Deaths in Dublin. The deaths from zymotic affections in this city amounted to 186, compared with an average of 114·9 in the corresponding period of the previous ten years. Smallpox, scarlatina, fever, measles, and diarrhœa were more or less prevalent and fatal. The 24 deaths ascribed to fever included 6 from typhus, 16 from enteric, and 2 from continued fever of undetermined type. At the close of the four weeks 110 smallpox patients were under treatment in the Dublin hospitals, compared with 102, 101, 135, 177, 188, 122, 86, and 47 at the close of the eight preceding periods respectively. Among the deaths registered in Dublin in the week ending Saturday, May 31, was that of a grocer's assistant, aged twenty-two years, who died in the Richmond Hospital on the 23rd of May, from "hydrophobia from the bite of a dog inflicted 16th of March, 1879." Whooping-cough was exceedingly fatal in Belfast, where numerous deaths from diarrhœa and fever also occurred. Fever was fatal in Galway. The cold wet spring has kept up the mortality from diseases of the respiratory organs in Dublin. The deaths from this class of diseases amounted to 209, and included 149 from bronchitis and 42 from pneumonia. The corresponding ten-years' averages were—from respiratory diseases generally, 99·2 deaths; from bronchitis, 68·7 deaths; and from pneumonia, 19·4 deaths. Several of the fatal cases of pneumonia presented the characters of *pythogenic pneumonia.*

Meteorology.

Abstract of Observations made at Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W. for the Month of May,* 1879.

Mean Height of Barometer,	30·057 inches.
Maximal Height of Barometer (on 5th at 8 a.m.),	30·607 „
Minimal Height of Barometer (on 31st at 9 p.m.),	29·612 „
Mean Dry-bulb Temperature,	49·4°
Mean Wet-bulb Temperature,	45·6°
Mean Dew-point Temperature,	41·6°
Mean Elastic Force (Tension) of Aqueous Vapour,	·263 inch.
Mean Humidity,	75·0 per cent.
Highest Temperature in Shade (on 31st),	63·0°
Lowest Temperature in Shade (on 10th),	31·8°
Lowest Temperature on Grass (Radiation) (on 10th),	26·8°
Mean Amount of Cloud,	60·0 per cent.
Rainfall (on 23 days),	2·048 inches.
General Direction of Wind,	N.W. and N.

Remarks.

A cold May—the first fortnight characterised by dry, parching, northerly winds and night frosts; the second half by very unsettled,

showery weather. The mean temperature was some 3° below the average for the previous thirteen years. At the beginning of the month an anticyclone became developed over the British Islands, so that on the morning of the 5th the barometer stood as high as 30·6 inches over the southern half of Ireland. As the sky was clear, and the air calm and dry, very low night temperatures were recorded, sharp frosts being experienced at the central English and Irish stations. In Dublin the thermometer rose on the 5th above 60° in the shade (to 60·7°) for the first time this season; but cold weather returned next day, and showers of cold rain, hail, and sleet fell, with a strong N. wind. Early on the morning of the 10th the shade thermometer fell to 31·8°, and the exposed thermometer on the grass to 26·8° in Dublin. The weather soon afterwards became more springlike, and on the 17th a milder but very showery period set in, so that vegetation made marvellous progress. This broken weather was caused by the passage of several bourrasques across the N.W. of Europe, generally in a south-easterly direction. One of these bourrasques was found over the English Channel on the morning of the 27th, when it began to move slowly westwards, reaching the S. coast of Ireland at an early hour on Friday, the 30th. It is noteworthy that high barometers and unusually fine warm weather prevailed in Scandinavia and Lapland from the 27th to the 30th inclusive. At 8 a.m. of the 29th the shade thermometer read 71° at Christiansund on the west coast of Norway, in latitude 63° N. On Sunday, the 25th, and the following day, unusually heavy showers of hail prevailed—one of these showers, at 4 p.m. of Sunday, was accompanied by peals of thunder. Some rainy days ensued, but the 31st was bright and fine. Foggy weather was noted on the 2nd, 3rd, 17th, 20th, and 30th. Hail fell on the 6th, 7th, 14th, 25th, 26th, and 27th. There was some sleet on the 6th. Thunder was heard at 4 p.m. of the 25th. Solar halos were observed on the 21st and 30th; a partial lunar halo was observed at 9 p.m. of the 30th. On the evening of the 26th the moon and Venus shone brightly in the west. There were sharp hoarfrosts on the 2nd, 3rd, 8th, and 10th.

CURARE IN EPILEPSY.

In the opinion of Kunze we possess in curare a remedy by means of which we may cure cases of epilepsy of long standing. He employs a solution of seven grains of curare in seventy-five minims of water, to which he adds two drops of hydrochloric acid. At intervals of about a week he injects beneath the skin eight drops of this solution, and in various cases in which convulsions had occurred for several years, he obtained a complete cure after eight or ten injections.—*Canada Med. Record.*

S. W.

PERISCOPE.

Edited by G. F. Duffey, M.D., F.K.Q.C.P.

INDIA-RUBBER BANDAGE FOR ULCERS AND OTHER DISEASES OF THE LEGS.

Dr. Henry A. Martin, of Boston (*British Medical Journal*, October, 1878, p. 624), enters very fully into the merits and mode of applying an India-rubber bandage, which he has found invaluable in a variety of diseases of the lower extremities; such as, injuries of the joints, especially of the knee and ankle; synovitis, acute and chronic; diseased bursæ; sprain, &c.; in œdema of the legs, and also of the arm, in that extremely painful form due to cancer of the breast. In varicose veins it effects an absolute cure. In the œdema of pregnancy and in phlebitis and phlegmasia dolens, in cellulitis of the leg and thigh, the effect of the bandage is in every way admirable. In eczema of the legs its value is unequalled. The best Para India-rubber is to be used in lengths varying to extent of surface required to be covered. It is to be applied next the skin, without any dressing whatever, one turn overlapping its predecessor, and so hermetically sealing the surface. The bandage should be applied in the morning, before the patient has been for any length of time on foot; it is best to apply it before rising. At bedtime the limb, as well as the bandage, will be found bathed in moisture. The leg should be wiped dry, and if there be an ulcerated surface, this is to be dressed with oiled linen rag. The bandage itself is to be rinsed in clean or carbolised water, and hung up to dry, ready for morning use; when, before applying it, the leg is to be freed from all oily matter, and made perfectly clean. In a few days after wearing the bandage, pimples, that run on to pustules (obstructed follicles), appear in greater or less numbers, leaving the skin in a perfectly healthy and unobstructed condition. After ten days or a fortnight the skin becomes highly sensitive, due to maceration and removal of all old and effete matter; this explains why such diseases as eczema improve so rapidly under the treatment. Dr. Martin attributes the results that follow the use of his bandage to the following causes:—1, the firm and constant pressure supporting the vessels; 2, the exclusion of air; 3, the warm moisture due to confined perspiration; 4, the pressure causing absorption of thickened edges of ulcers.—*Lond. Med. Record*, Dec. 15, 1878.

TREATMENT OF ULCERS.

In the New York Hospital the method found most serviceable has been a combination with that used by Lister with the India-rubber bandage.

of Martin. The ulcer is first washed with a 1-20 solution of carbolic acid, then covered with a piece of the "protective" oiled silk, over which is placed one or two larger layers of lint or felted paper, which has been previously dipped in a saturated solution of boracic acid. The whole is then covered with an elastic bandage, which is only changed when it becomes soiled by the discharge. Occasionally it is found better to take off the elastic bandage at night, but not the other dressing, which is then covered by a piece of impermeable tissue, such as thin gutta percha or waxed paper secured *in situ* by an ordinary bandage. In sloughy ulcers a layer of iodoform is put over the surface before applying the "protective." The rapidity of cure by the combination treatment has been found to be much greater than when either the Lister dressing or the rubber bandage is used alone.—*N. Y Med. Jour.*, May.

TREATMENT OF INDOLENT ULCERS BY MEANS OF SHEET LEAD.

Dr. F. P. Atkinson, Kingston-on-Thames, writes in *The Practitioner* for May, 1879:—"A good deal of attention has been attracted during the past year to the American treatment of indolent ulcers by means of Dr. Martin's India-rubber bandages, and reports received on all sides as to the value of this method are eminently satisfactory. I would, however, urgently request that a trial be given to the system which I was in the habit of adopting in all such cases at St. Bartholomew's Hospital, Chatham, some thirteen years ago—viz., the application of sheet lead, moulded to the shape of the leg and kept on by an ordinary calico bandage. The size of the lead should be sufficient to cover the ulcer completely and lap a little over the whole skin; the edges and angles should be well rounded, so as not to chafe or irritate; it should be about an eighth of an inch in thickness, and moulded very accurately to the shape of the leg, so as to allow of no indent being apparent on the surface. After it has been carefully fitted, the leg should be bandaged from the toes upwards, and all that then need to be done is to uncover the ulcer night and morning and allow some water from a sponge to trickle over it. The granulations should never be touched with the sponge itself. I believe that the *rationale* of this treatment is pressure, the same as in the case of the elastic bandage, though there may be also some action produced by the secretions upon the lead, as is said to take place when the lead nipple-shields are used. The great advantages of the system proposed are simplicity and cheapness, though as regards the former I think it must yield the palm to the elastic bandage. It would appear that in some parts of Africa the natives use sheet copper, and with some success, but I cannot say I have ever tried it myself."

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OF

MEDICAL SCIENCE.

AUGUST 1, 1879.

PART I.

ORIGINAL COMMUNICATIONS.

ART. III.—*A Demonstration in Antiseptic Surgery.*[a] By JOSEPH LISTER, Esq., F.R.S., LL.D.; M.D. (*Honoris Causâ*), Univ. Dubl.; Professor of Clinical Surgery in King's College, London.

[From Notes by MR. W. THOMSON, F.R.C.S., Surgeon to the Richmond Hospital.]

I DO not propose, on the present occasion, to go into evidence of the truth of the germ theory of putrefaction. I may take that for granted. Every year that passes adds facts in favour of that theory, and tends to clear away any difficulties that may have been raised regarding it. I assume, therefore, that putrefaction in wounds and abscesses is analogous to the fermentation of a saccharine solution under the influence of the yeast plant—that it is due to the existence and development of minute organisms. To endeavour to prevent the putrefaction of blood or serum in a wound used to be a matter of an absolutely hopeless character as long as the view entertained as to the nature of putrefaction was that of Gay Lussac, who believed that the oxygen of the air was its cause. If a discharge came out—as it must do, for we cannot seal up wounds hermetically, except very small ones—oxygen could get in; and therefore it was, according to that view, absolutely hopeless to try to prevent putrefaction. But when it came to be established, as Pasteur seemed to me to have done,

[a] On the 26th June, Mr. Lister, being in Dublin for the purpose of receiving the Degree of M.D., *Honoris Causâ*, from the University of Dublin, visited the Richmond Hospital, and gave an explanation of his method of dressing wounds, in the presence of a large number of surgeons and students.

that putrefaction was due to the development of organisms, the matter assumed a totally different form. The question was, not to exclude air, but to dress the wound with an agent capable of destroying these organisms without acting too injuriously upon the wound. We know, for instance, that if lice infest a person's head we can destroy them without injuring the scalp. If itch exist in the skin we may destroy the offending insect without hurting the integument. And thus it seemed not hopeless that we might apply to wounds some agent that should destroy these septic organisms without acting seriously upon the tissues.

The first agent I used for the purpose happens to be that which hitherto has been the most convenient. I am not bound to any particular agent. We are always ready to use any other that can be shown to be preferable; but as far as I have gone carbolic acid seems to possess, for the great majority of cases, the most convenient properties. It is exceedingly powerful in destroying bacteria; it is volatile, which is a great advantage for providing an antiseptic atmosphere; it is soluble in a great variety of materials—so different, for example, as water, the fixed oils, and melted resin. This faculty of blending with materials of various natures gives carbolic acid great powers as a detergent. It penetrates through greasy matters with perfect facility. If some greasy dirt exists between the teeth of your forceps, or, say, is on the surface of the skin, or in its hair-follicles, carbolic acid will penetrate and purify this grease in a way which most salts which are soluble in water cannot do. On the Continent some of our earnest German friends, before they operate on a part, carefully cleanse the skin with ether and soap and water. That is altogether unnecessary. Carbolic acid will do all that is needful; it will clean the most dirty skin in a few minutes. It acts, indeed, upon the epidermis with an energy which, if we do not use it pure, will make our fingers suffer seriously from anæsthesia and uneasiness; for if the acid is impure it is imperfectly soluble in water, and minute particles of undiluted acid become deposited on the epidermis, and act upon it with caustic effect. But if the article is pure it makes a perfect watery solution, indicated by brilliant clearness, and if then used of not unnecessary strength—say 1 of acid to 40 of water—it produces no such inconvenience.[a]

[a] I would strongly recommend the very pure form of the acid sold under the name of Absolute Phenol, at a very reasonable price, by Messrs. Bowdler and Bickerdyke, of Church, near Manchester.

But the way in which it mixes with various materials gives carbolic acid great advantages otherwise. A new principle in pharmacy seems to have been brought out by our experience with this agent. I believe it is generally assumed by pharmacists that the strength of any given agent in its action depends upon the proportions in which it is present in the vehicle or solvent—that if the agent exists in twice as great amount, it will be twice as strong in action. Now that is true in the same solvent, but it is not true with different solvents. Thus carbolic acid is soluble in 20 per cent. of water. But oil can be mixed with it in any proportion. Suppose you compare a 1 in 20 solution in water with a solution of 1 part of carbolic acid in 5 of oil, you will find that the solution of 1 in 20 of water is more powerful in its immediate action than a solution of 1 in 5 parts of oil. The solution in oil contains four times as much of the agent as the watery solution, and yet is not so powerful in its action. You can bear the 1 to 5 oily solution applied to your tongue-tip or the thin skin of the lip better than you can the 1 to 20 watery solution; and the 1 to 20 solution in oil is so bland that it can be used for smearing a catheter or lithotrite without irritating the delicate mucous membrane of the urethra, to which the 1 to 20 watery solution would be intolerable. Now the reason appears to be simply that water holds the carbolic acid feebly, and so readily lets it fly off to attack anything else. Oil, on the other hand, holds it strongly, and therefore lets it go with difficulty. With common resin we have the opposite extreme to water. If you melt 1 part of carbolic acid with 5 parts of resin, you find that you can hardly perceive the taste of the acid at all in the mixture. I at first supposed that some sort of decomposition of the acid must have occurred, but I found that such was not the case at all, only the carbolic acid was more strongly held by resin than by oil. Now I say that is highly interesting as a new principle in pharmacy—that the energy of action of any caustic or irritating substance depends, not merely on the proportion in which it is present in its vehicle, but also in the degree of tenacity with which its particles are held by it.

But now as to the application of this principle in the employment of carbolic acid. The watery solution, besides being cleanly, is very powerful in immediate operation, but as there is not a large quantity present in the solution its action is not of long duration. Now those are just the properties we want for a detergent application. We want something that will act powerfully for the time,

but transiently. Suppose a patient comes into hospital with a compound fracture of the leg—there septic mischief has already been introduced into the wound by contact of the injured tissues with objects of the external world, and what we want is to destroy the septic organisms already present in it. We wish to do this by means of some germ-poison that shall act powerfully, but that, as soon as its work is done, shall disappear, so as to leave behind as little effects of irritation as possible. For such a purpose, then, we use the 1 to 20 watery solution. Again, in our operations we must have an agent that shall produce an antiseptic atmosphere—that shall be strong enough to purify the air in which it is diffused in the form of spray—but that shall not irritate the wound to an unnecessary degree. If the solution used in the spray were like the solution in oil, it would continue to act for a long time afterwards on the tissues. But the watery solution, acting only for a short time, purifies the atmosphere without seriously irritating the tissues.

For a permanent dressing, on the other hand, we want a preparation that will not act too energetically. It must keep the septic material out of the wound; but as long as that condition is complied with, the less it acts the better, or it will irritate the skin. Further, it must not be too transient in operation, otherwise it will lose its efficacy before the dressing is changed. And so for a permanent dressing we require some vehicle which shall present it mild in its operation, but persistent. For this purpose we use resin.

In this gauze which I have here we have carbolic acid blended with resin, with a little paraffin added to prevent the mixture from being too glutinous. Each thread of the gauze is occupied with this resinous mixture. The resin is itself insoluble in the discharges, cannot be washed out, and then again the resin holds the carbolic acid so tenaciously that the discharge may go through over and over again without washing all the acid out. So between the two we have what we require. We have the carbolic acid present in a form in which it acts sufficiently but mildly, while it cannot be dislodged by any amount of discharge that is likely to occur in twenty-four hours, and if the discharge comes to be extremely slight, as in the later stages of a wound, you may leave the dressing unchanged for a week. Beyond that I do not generally trust it; but for a week you may trust it with absolute confidence if the discharge be small.

Now as to the manner in which this gauze is applied. We must have a sufficient mass of it. I shall make up a dressing as for a case in which I expected a large amount of discharge—as in psoas abscess. We generally have about eight folds of gauze. I now make up a dressing of nine layers, which is often a convenient form, the piece employed being as long as the breadth of the tissue. This piece, about a yard square, I fold into three, and then crosswise into three again, so getting nine folds. It is essential, if you expect much discharge, that the dressing should be large—that there should be a considerable space between the wound or source of discharge and the edge of gauze dressing, otherwise you will not have material enough to ensure the absence of putrefaction. If I were to put it on as it is—gauze, and nothing more—the discharge would come directly through the porous material, and passing over and over through one limited portion, would probably, in spite of the retentive property of the resin, wash out all the carbolic acid from that part before twenty-four hours had expired; and as soon as the antiseptic had thus been removed from that portion of the gauze putrefaction would spread in. I therefore interpose under the outermost layer some impermeable tissue to prevent the discharge from traversing the gauze directly, and compel it to travel through its entire breadth. The best article for this purpose is a very thin mackintosh cloth, which is very durable, and can be used again and again for weeks together, and thus in the long run is as cheap as it is trustworthy. I take a piece of this material as large as the folded gauze, and put it under the outermost layer. It is made of pink colour, rather than white, to make it conspicuous and show which side of the dressing is to be kept outwards. If you put it outside altogether it is liable to be displaced. Then you should take care not to make any pinholes in the centre, near the wound. This may seem a small matter, but there is room enough for I do not know how many bacteria to go abreast through a pinhole. The time is coming, or is already come, when a statement of this kind can be made without being received with a smile of incredulity, because it is now established that these bacteria are the cause of putrefaction; and if so, the laugh must be on the side of those who saw, as distinguished from those who could not see, the truth.

There is an additional antiseptic security in the fact that we fix on the dressing with bandages of the same carbolised gauze. They are also convenient in other ways. They are the cheapest form of

bandage we can use, being only one-third the price of ordinary cotton bandages; they are light, and apply themselves well to the part; and the slightly glutinous character of the material in them prevents the turns from slipping on each other.

In proceeding to open a psoas abscess, we use the strongest watery solution of carbolic acid—that is to say, 1 in 20. I pour some out into a vessel, and with a piece of gauze or rag dipped in it I purify the skin and hair-follicles. I must not expect impossibilities of carbolic acid. I give it a little time to do its work. Meanwhile, any instruments I am going to use are purified by being put into a tray containing the same carbolic acid solution. Every step must be taken in such a way as really to attain your object. Do not do anything for mere form's sake. The forefinger must be purified. See that the solution goes under the nail, and under the fold of skin beside it, for you may wish to introduce the finger to explore. In psoas abscess it is a very common thing to find a large amount of pus underneath the skin coming through a small hole in the fascia, and if you were to leave matters so you would have an inadequate drainage. After making an opening in the skin, you search with the finger for the opening in the fascia; you tear it to a larger size with the finger-tip if you do not find it large enough; and, indeed, for many purposes the finger-tip is extremely valuable as an explorer. I have known a surgeon open a large psoas abscess, using the spray and gauze apparently rightly, and then, after the bandages had been applied, take off the dressing, and, remarking "I have forgotten something," plunge his finger unpurified into the wound in order to make an exploration. He had better not have used the antiseptic means at all, because he only brought them into discredit.

Abscess is the simplest of all cases for antiseptic treatment, because here, as we do not inject the cavity, the carbolic acid is not applied to the affected tissues, but only to the exterior to keep the septic mischief out; yet the results of the mere exclusion of the causes of putrefaction are in the highest degree important and striking. If we open a psoas abscess antiseptically, and continue the treatment with true antiseptic precautions, it is a remarkable circumstance—new to surgery and pathology—that from the hour when it is so opened it should never furnish another drop of pus. This, however, is now an everyday experience. I have left behind me in King's College Hospital three

cases of chronic abscess connected with spinal disease. One was a psoas abscess in a young woman which, when she was admitted about six weeks ago, extended considerably beyond the middle line of the abdomen and reached upwards above the margin of the false ribs, downwards through the upper third of the thigh, and backwards to the loin. She was sent to me by a surgeon who for a long time had practised antiseptic treatment, but who had so failed with psoas abscess that he begged me to take her under my care. Well, we let out fifty ounces of thick yellow pus, and there has been no further suppuration—merely a serous oozing—from that time to this. Another case is that of a young man whose elbow-joint I had an opportunity of excising a short time ago, without any surgeon having previously put a knife into it. It too often happens that some surgeon opens an abscess without antiseptic measures, and then sends the patient into hospital after he has admitted putrefaction. When once this has occurred it is extremely difficult—often impossible—to eradicate the septic evil by any means at our disposal. But, in this instance, the skin happily remained unbroken. I had hoped to be able to cure the disease without excision by freely incising antiseptically, but I found the bones in such a bad state that I had to convert the incision into an excision. The wound had nearly healed without any suppuration whatever, when, just as we were rejoicing in this result, the patient called my attention to a swelling on the other side in his loin, and this proved to be a lumbar abscess. I opened it a week ago, and there has not been a drop of pus since. The third case is that of a dorsal abscess, evidently connected with the spine, occurring in a middle-aged man. In that case also there has been no suppuration whatever since the abscess was opened.

These are the only cases I have now under my care of that kind, so that you observe I am not taking selected specimens—I am simply telling you what we reckon on as the rule; and I may add that the case of this description which immediately preceded these three under my care in the hospital was a psoas abscess of large size, in a girl about twelve years of age, where there was not only an acute curvature of the spine, but several pieces of bone mixed with the pus which I evacuated—demonstrating conclusively the connexion of the abscess with the diseased vertebræ. Yet here also suppuration ceased from the time of the opening of the abscess—nothing but serum being afterwards discharged; and, by patient perseverance for five months with strict antiseptic management, the cure was accomplished; and the child left the hospital

two months since, healthy and strong, presenting a remarkable contrast to her miserable condition on admission.

I have been asked before now, with reference to such a case—"How do you know it is not the carbolic acid that effects the cure by exerting some specific action on the diseased vertebræ?" One who asks such a question follows the disposition, which seems a very common one, to adopt the more unlikely and complex view in preference to the more probable and simple one; for, in the first place, even supposing that the carbolic acid could gain access to the carious vertebræ, we have no reason whatever to suppose that it would exert any beneficial influence upon them; and, in the second place, it is utterly out of the question to imagine that carbolic acid, applied in the form of spray and gauze about an opening in the integument of the groin, could make its way along the sinus so as to reach the affected part of the spine.

And that the acid does not, in point of fact, travel thus up along a sinus is proved by the progress of the case, as follows:—After the sanguineous character of the discharge has passed off, as it does in one or two days if we can squeeze out anything at all, it is a drop of transparent serum, whereas if carbolic acid did get into the sinus it would make that serum opaque by coagulating the albumen.

Let me repeat, then, that in treating an abscess antiseptically we do not apply the agent to the diseased tissues at all. The carious bone, like other parts affected with inflammatory disorder, is well disposed to spontaneous recovery, if only it be freed from all sources of irritation. By opening the abscess and providing free drainage, we get rid of the inflammatory disturbance previously kept up through the nervous system by the tension of the accumulated pus, while by our antiseptic means we exclude the more serious irritating agency of putrefaction; and supposing that the bones concerned can be kept in a state of perfect rest, which, in the case of the bodies of the vertebræ, can be readily done by strictly enforcing the horizontal posture, the chronically inflamed tissues recover through the unaided efforts of nature.

Drainage is provided for by the caoutchouc tubes of Chassaignac. In a large abscess I use one as big as my little finger, and in smaller collections of matter tubes proportionately small. The tube is steeped in the carbolic acid solution for two or three minutes. Surgeons sometimes keep them for days together in the solution before using, but this is superfluous care altogether if the tubes are new, as no living organisms can exist in the substance of the

caoutchouc. But we frequently use them over and over again for different cases, and under such circumstances there may be in the interior a crust of dirty septic material, and for purifying such old tubes an hour or two in the carbolic solution will be desirable. In order to prevent the tube from being pushed in too far, we have two loops of carbolised silk attached to the orifice, each of them knotted at its extremity. The orifice of the tube is placed on a level with the skin, and when the dressing is bound down it gets a purchase on these knotted pieces of silk stretched upon the skin, and so the tube cannot leave its position. If the direction of the tube has to be oblique, we cut the orifice obliquely in proportion, so as to have it perfectly level with the surface. If the tube projects, it gets bent, and fails to convey the discharge properly.

The opening in the skin is made merely sufficient for the admission of the tube. Like others, I used to be a strong advocate for a free incision, believing that if that was not done we should have sinuses formed. But that is now no longer necessary with drainage tubes and antiseptic arrangements. The tube does far better than a free incision. The latter might have its edges glued together with lymph or clots, and so be altogether inadequate, but with the tube this cannot be. And while the pus or serum is taken freely away, being prevented from putrefying, it is itself unirritating, and no longer provokes, as formerly, a copious further effusion. The smallness of the incision is, of course, in various ways a great advantage. In the case of a young lady, for instance, with an abscess in the neck, we wish to avoid making any mark. We used to make a free incision, but now a puncture, just large enough to admit a small tube, will be quite sufficient, and will leave a punctiform scar which nobody can observe.

Now I will suppose, in the case of a psoas abscess, that the incision has been made, the purified finger has broken down any barriers interfering with the introduction of the tube, and the tube has been passed in, but all this has been done under the spray, of which I have not yet spoken in detail. Here is the apparatus. The spray consists of the 1 to 20 solution of carbolic acid mixed with the vapour of boiling water. This, as it rushes out of the small orifice in the tube, which proceeds from the boiler, sucks up the solution and carries it over the wound. The lower end of the tube which conveys the solution should have a piece of sponge in it to filter the fluid, otherwise the small orifice will soon get choked up with dust. But with this arrangement it never will get choked, although the

sponge will have to be renewed occasionally. Now you must take great care that the spray is not merely steam, for a spray of steam alone would be worse than nothing at all. As you are well aware, high-pressure steam at a short distance from the point of issue is cold, and therefore has no destructive effect upon organisms such as boiling water would have, and hence it would only project successive portions of atmosphere upon the wound, with its septic particles in full activity. Therefore, it would be far better to let a wound take its chance of any organisms that might fall from the atmosphere without such a spray of steam only. Make sure, then, that you really have carbolic acid solution in the spray. This is easily ascertained by alternately compressing and relaxing the tube proceeding from the solution. Here, the tube being compressed, we have a jet of steam only, and you see its blue colour, indicating a high degree of pressure. Now, if I relax the pressure of my finger upon the tube, and allow the solution to be sucked up by the issuing steam, you see we get a much larger cloud, white in colour. It is a cloud so fine that in its further parts it is hardly more obscuring or more wetting than a mist, and if there be no draught to disturb it, you may safely trust these drier and more transparent distant portions. You will then find that it does not obscure your operations, and does not moisten your shirt sleeves. It is also a respirable spray. I do not mean to say that you would select it to breathe in, but it is not intolerable to the assistants, and if you are operating on the head or neck there is no necessity to protect the patient's lungs. He may breathe it without being the worse.

The abscess being supposed to be evacuated and the drainage tube introduced, I now put on the dressing. The deepest part of the gauze must be dipped in the carbolic solution, because the dry gauze is not strong enough at the temperature of the air to destroy the septic matter that comes in contact with it. The watery solution does for this. Under ordinary circumstances we use 1 in 40, as less irritating; but in a case of psoas abscess, such as we are supposing, I use 1 in 20, because the avoidance of putrefaction is a matter of life and death to the patient; and as the acid does not come in contact with his tissues, the only inconvenience of using 1 to 20 is to my fingers. If I dip a dirty rag in 1 to 40 or 1 to 20 solution, I know that it is at once pure itself and fit to purify other things with. This is a great demand to make on the antiseptic, but it complies with it. But if I take a bit of dry gauze that has

been lying exposed to the air, or perhaps on a dusty table, and put it on the orifice of the wound, that will be just the way to make putrefaction occur. The deepest part, therefore, must be soaked in the lotion, and this is most conveniently done in the form of a separate or loose piece of gauze folded together; and where the discharge is likely to be great, as immediately after opening a large abscess, I should also moisten the middle of the principal dressing with the solution. This being done, I proceed to put it on, the middle of the dressing being opposite to the situation of the wound; and then you observe that, thanks to the mackintosh, I get the same advantage from this comparatively small number of folds of gauze as without the mackintosh I should get with a mass as thick as the distance from the wound to the edge of the dressing. Then I put on the bandage in the ordinary fashion. If the dressing is in a part where there is much movement, as the groin or the neck, I find great advantage in using an elastic bandage round the edges of the dressing, drawn tight enough to bring its elasticity fairly into play. We use safety pins for attaching the bandage to the dressing, because the gauze is of so loose a structure that an ordinary pin may travel about in it—and a patient's life may often depend upon a pin.

On removing the dressing the day after the opening of the abscess, you will find a discharge of red serum soaking the gauze, and you may have to change the dressing every day for three or four days. The discharge, however, will get steadily less; and when at the time of the usual visit you see no appearance of it at the edges of the folded gauze, you do not disturb the dressing, and the time will come when you may leave it for a week, but not beyond that time. Now, in changing the dressing you use the spray again; and here you must take care that the spray really gets under the dressing at the moment when it is raised. When you have got all your arrangements complete, do not let any one make movements in the vicinity. Let everything be perfectly tranquil, so that the spray shall not be changed by a breeze. Sometimes assistants are so impressed with the importance of their work that they are perpetually sighing, but these sighing philosophers must be requested to sigh away from the spray. When you are removing the drainage tube to cleanse it, be especially careful that the spray is really over the wound. As it is withdrawn air of some kind must go in, and if it be not the spray it will be septic air.

Abscess, the most simple case in some respects for antiseptic treatment, is the most difficult in others, because the pus in it is in all probability as liable to putrefaction, if the causes of putrefaction get access to it, as if it were pus in a glass bottle at the same temperature. Now with wounds it is very different. If it were not so, union by first intention would have been impossible without antiseptics, whereas we know it was of old a thing commonly aimed at by English surgeons, and often, as after the operation for hare-lip, reckoned on with confidence. Before I saw Pasteur's papers I used to wonder how the layer of blood or lymph in the wound made in operating for hare-lip did not putrefy. After a plastic operation on the face I remember observing that if the lymph was beyond a certain thickness there was suppuration, but there might be a fair thickness and yet no suppuration. Now, that healing without the formation of pus implied that the lymph did not putrefy, for if it had done so the putrefaction would assuredly have involved suppuration. But if the lymph had been between two bits of glass or guttapercha tissue at the same temperature it would have putrefied. What was the reason of the difference? Somehow there is a peculiarity in living tissue as distinguished from ordinary matter that acts antiseptically, as we may say—prevents the development of septic organisms. And it appears from various facts to which I must not now refer that such really is the fact—that healthy living tissue has the power of counteracting the development of these minute organisms—on the same sort of principle, probably, as a healthy plant can resist parasitic fungi. If a plant becomes enfeebled by cold you see fungi developed upon it, but if it becomes vigorous again the fungi leave it. The healthy tissue of the plant resists the growth of the fungi. Well, then, the healthy living tissues of a wound—that is to say, if the tissues are perfectly free from irritation and disturbance, and have recovered from the damage done by the wound—these tissues resist the development of the organisms. And not only the healthy tissues, as we ordinarily call them, but the blood-clot seems to have this power. The blood-clot may be regarded as a form of tissue. You may say—"That seems strange; the fibrin is merely a chemical substance that can be formed outside the body by the mixture of two solutions; the red corpuscles soon lose their vitality, and constitute a large mass of the clot; the serum is a mere chemical solution." But, then, there are the white corpuscles. These we know retain their vitality outside the vessels; and it appears that

these white corpuscles in the clot confer upon it the properties of tissue, and that by virtue of them the blood-clot in the healthy condition may remain unputrefied, although the causes of putrefaction are mixed with it. If you do not understand these things you will not be able to comprehend various apparently contradictory circumstances in the behaviour of wounds.

The opponents of antiseptic surgery say you may have a contused wound healed without suppuration if you adopt the method sometimes advocated, of absolute immobility of the wound. Suppose a wound in compound fracture covered with dry lint, the limb being kept absolutely immovable. It may be that the surgeon has introduced his finger into the wound without antiseptic purification. The blood-clot in such a wound may remain without putrefaction although the causes of putrefaction have been mixed with it; and although there has been no antiseptic treatment, it may become partly organised and partly absorbed, and healing may occur without suppuration taking place. Such a thing is a possibility. Now, if you could reckon upon these things as matters of certainty, then antiseptic treatment of wounds would be needless. But unfortunately you cannot. In a case of compound fracture you cannot be quite sure that the limb can be kept in an absolutely immovable position, even with the best arrangements for it, and you cannot be sure that the blood-clot will remain in the condition essential to enable it to protect itself from the invasion of septic organisms. But when that kind of healing does occur in an open contused wound, it is a proof that the blood-clot has the power of resisting putrefactive influences. If that same blood had been exposed in an ordinary wineglass it would have putrefied. In a purified wineglass, however, it might not be so. I have made some experiments in which I demonstrated, as I believe, that if blood be taken antiseptically from a bullock's jugular vein into a wineglass purified by heat and protected from access of dust, the clot may remain free from putrefaction for an unlimited time in spite of the influence of the gases of the air. This proves that there is not in the blood anything of a septic nature to start with. But, further than this, I have found, in experiments not yet published, that you may put into such purified glasses drops of water of considerable size; and, although every hundredth of a minim probably contains a septic organism, and although the blood that flows into each glass is mixed with this septic water, yet the clot there formed, if protected from any other source of disturbance

afterwards, remains sweet and pure for weeks together, proving that even outside the body the blood-clot has the power in itself of resisting the development of septic organisms—a most important truth. And so you have explained the marvels of union of great stumps by first intention, as has occurred in the Aberdeen Infirmary, under the use of acupressure. These were exceptional cases, no doubt, but they occurred. The wounds were made without any antiseptic precaution; the sponges were wrung out of ordinary water—septic water certainly; septic matter in abundance existed on the surfaces of such a wound; the edges were brought together with silver stitches, after the arteries had been closed by acupressure. And yet such a stump might heal without the formation of a drop of matter, implying that the blood-clot that certainly did exist, especially about the bone, though it had been mixed with septic matter, had not putrefied, for if it had suppuration would have been inevitable. And how were those stumps treated? You find one condition was leaving them without any dressing, and lying on a pillow never disturbed. But suppose such a stump attacked by muscular spasm, churning up the blood-clot, then the septic particles would develop, and then you would have putrefaction and septic suppuration; so that without antiseptic treatment in this kind of case you are at the mercy of perfect immobility, and, as I have said before, even with the best means you cannot secure this. Suppose, again, a compound fracture of the leg. What apparatus can ensure you against any movement as the result of spasmodic quivering of the muscles of the thigh? We cannot reckon with confidence on this perfect immobility.

And besides it is by no means always desirable that we should have a part which is the seat of the wound made perfectly immovable. I lately operated for excision of the elbow in a boy about nine years old, whose arm was useless in consequence of fracture of the lower end of the humerus, combined with dislocation backwards of the bones of the forearm. A considerable time had elapsed since the accident, and the fragments of the humerus had united with abundant callus. I was anxious not to cut off the ends of the radius and ulna, for fear that in consequence of the removal of the epiphyses the forearm might not grow in proportion to the other, and consequently, as he grew up, there might be a want of correspondence in the two limbs. Accordingly, I determined to proceed as follows. Having sawn off a small piece of the end of the humerus, I pared down with a chisel the

thickened and misshapen mass so as to imitate the normal form of the articular end of the bone, rounding it off and making with the gouge a pit in front for the coronoid process, and one behind for the olecranon; scraped away some fibrous tissue which occupied the larger sigmoid cavity of the ulna, and reduced the dislocation. Thus neither the humerus nor the ulna possessed any cartilage, but there were two raw surfaces opposed to each other; and the only chance I had of obtaining a movable joint was by executing passive movements from the first. That was accordingly done. No suppuration whatever took place in the interior of the wound, though there was in the earlier stages pretty free bleeding when the movements were made, in consequence of the breaking down of the vascular adhesions which constantly tended to form; and the boy has now a good strong movable joint, with, I hope, no chance of having the growth checked as compared with the other side. Such an operation would, I conceive, have been altogether inadmissible without antiseptic management. Without it I should have thought it needful to take away much more of the bone, in order to avoid the risk of violent inflammatory disturbance through tension. But supposing the procedure admissible, if I had been condemned to absolute immobility I must have given up all hope of obtaining a movable joint, because ankylosis would infallibly have resulted.

Now I must content myself with saying a few words only with regard to our mode of managing wounds. During the performance of an operation we employ the spray. If we use it, it is not necessary at the conclusion of the operation to wash the wound with carbolic acid solution. We wish that the carbolic acid should come as little as possible into contact with the cut surfaces, because it is to a certain extent an irritant, and in proportion to the degree of its action on the tissues increases the flow of serum during the first two or three days. There are some cases in which you can operate with a very small external wound. In genu valgum, for example, suppose you proceed to divide the femur after M'Ewen's method, you make a very small incision in the skin, but a considerable internal wound, including that of the bone. If you use the spray you may be sure there is no impurity in such a wound. If you do not use the spray, however, you can have no such security; and if you abstain from using the spray, and at the conclusion of the operation endeavour to get rid of any septic mischief which you may have introduced by injecting a quantity of carbolic acid solution, this will irritate the wound, and the smallness of the

outlet may lead to tension and consequent inflammatory disturbance, involving perhaps necrosis of the ends of the fragments of bone. It is thus far better to use the spray, and so combine complete security against putrefaction with the minimum of irritation of the tissues by carbolic acid. No doubt the spray complicates the surgeon's work. To have to carry an apparatus about is a nuisance which I should be delighted if you could show me how to dispense with. But I speak from experience. I worked without the spray for a considerable time, but I know that our good results are very much more constant now, and therefore I feel we cannot dispense with it. I have lately operated on several cases of genu valgum in the manner referred to, and I felt that in so doing I did not subject the patients to any risk whatever. That I could not have felt without the spray.

In the case of loose cartilages in the knee we remove them now without any apprehension of evil result. We make the opening sufficiently large to extract the body at once, but I would advise you to use for the first twenty-four hours a small drainage tube rather than stitch the wound up completely. I was lately asked by a surgeon to see such a case in which a tube was not used. It had been necessary to explore the joint freely with the finger, and the disturbance of the articulation had involved considerable effusion, for which there was no sufficient outlet. The patient was suffering most agonising pain, the temperature was high, and the joint extremely distended. I remarked that the question here was—is this septic mischief or the result of tension? The surgeon replied that he had attended so carefully to antiseptic precautions that he felt sure no putrefactive mischief could have been introduced. As a general rule, I confess I do not trust the statements of people with regard to this matter unless I know they have a sincere belief in the theory of the treatment, and have been practising it for some time in real earnest. When a man does an operation for the first time on antiseptic principles, and tells me he is sure all has been carried out strictly, such a statement goes in my mind for absolutely nothing. But in the case to which I refer the surgeon's statement was entirely justified. I found an immense amount of serous discharge in the dressing, but no odour. The tension had been so great as to produce much irritation, causing great effusion, which, however, could not escape adequately owing to the want of a tube. I said we must enlarge the incision, and put in a large-sized drainage tube into the joint. That was

accordingly done, and in a few hours the temperature had fallen to normal, and all went well afterwards. Had relief from tension not been afforded, disastrous results would probably soon have occurred from inflammatory, though not septic, suppuration. This was, therefore, an example of the bad effects of tension as distinguished from putrefaction. Hence we use drainage tubes in wounds as well as in abscesses to prevent the inflammatory disturbance which might otherwise arise from the accumulation of retained blood or serum.

The only other point to which time will permit me now to refer is this. In order to aim at perfection of results, we must avoid in the wound the irritation of the antiseptic itself. We wish to imitate the condition of the subcutaneous wound where the skin, itself perfectly bland and unstimulating, excludes all sorts of mischief from the external world. If we apply carbolic acid directly to a wound, this will irritate it. It is true that it only irritates the surface to which it is applied. It cannot spread into the interior like the putrefactive fermentation, or do mischief to the whole wound and parts around it through the nervous system, as tension does, but it may make a wound which might heal without any suppuration, heal with superficial suppuration. Suppose the edges of the divided skin cannot be brought together, you will have the whole wound occupied by a blood-clot. If you have an antiseptic acting on the blood-clot directly, in the course of a few days it will be gone, and in its place there will be a hollow granulating and suppurating sore. What we wish is that the clot should behave in the same way as in a simple fracture, becoming partly organised, partly absorbed, without suppuration. And so between the wound and the antiseptic we interpose some form of tissue, such as oiled silk, coated with copal varnish, which makes it less easily permeated by carbolic acid. That is put on the wound, and then the gauze dressing is applied just as in the case of abscess. We call this tissue, for the sake of a name, "protective," because it protects the wound from the irritation of the antiseptic.

It may be said that having the superficial wound heal without suppuration is a luxury more than a real advantage. But it is more than this. For instance, in the case of a fracture with an external wound, if you once get a granulating sore established, you must dress it more frequently than if you have a blood-clot becoming organised; because the serum that oozes from an organising coagulum is insignificant in amount compared with the pus that

results from the suppuration occasioned by the stimulus of the antiseptic, or, as I have termed it, "antiseptic suppuration." It is, therefore, something more than a luxury to have the benefit of this "protective," which, besides, keeps the surface of the wound moist, and prevents the gauze from adhering to it and causing pain when the dressing is removed.

In this necessarily imperfect communication I have endeavoured to indicate the main principles that guide us in antiseptic surgery. I have illustrated our chief means of averting the worst evils that used to beset us in surgical practice—those, namely, which resulted from putrefaction—while we have seen that second only in importance to this is the avoidance of tension; and further, that it is well worth our while to prevent, as far as possible, the irritation of wounds by the direct action of the antiseptic.

ART. IV.— *Wry Neck: its Phases and Treatment.* By R. L. SWAN, F.R.C.S.I.; Surgeon, Dublin Orthopædic Hospital; Member of Surgical Court of Examiners, Royal College of Surgeons, Ireland; late Resident Surgeon, Dr. Steevens' Hospital.

IN estimating the importance of any diseased condition of the frame, the question of most weight with the surgeon is its effect on the life of the sufferer, and his first duty is undoubtedly to repel fatality. What appears next to demand his attention would be its relation to the comfort of his patient. It must be admitted that there are some affections devoid in themselves of danger to life, and even unaccompanied by physical pain, which, from the obvious distortion they produce, are a source of lasting unhappiness, and, in the female sex especially, entail a misery easily comprehended, irrespective of their interference with the natural prospects of the individual. To remove or prevent such an affection must be deemed of the utmost importance; and should the efforts of the surgeon succeed, he will in such an instance surely "minister to the mind diseased."

Wry neck is the deformity to which I desire especially to allude, and before referring to the structural changes to be overcome, or the treatment which I have found most successful, I wish, in illustration of the truly pitiable nature of the affection, to delineate as closely as possible, from the patient before me, the features of an aggravated case of wry neck which I have now under observation:—

CASE I.—M. H., aged twenty-three. Mother died at birth; father soon afterwards. Her condition was first noticed in early infancy and

has gradually increased. The young lady has the appearance of being highly intelligent, and but for the distortion would have been attractive. Viewed from behind, the left side of the neck is almost obliterated. The left scapula is drawn up and rotated apparently by the contraction of the anterior fibres of the corresponding side of the trapezius. The head is drawn toward the left side and rotated, so that the occipital protuberance is close to the acromion process. There is an aggravated compensatory dorsal curve, with the usual costal displacement. Viewed from before, the face has an oblique aspect forward and to the right side. The left ear approaches the sternum. The left side of the face is not equally developed with the right; and while the distance from the right eye to the commissure of the mouth measured $2\frac{1}{2}$ inches, the corresponding distance on the left side measures but 2. The general aspect of the face is one of distress and mournfulness, mingled with something of a grotesque nature. The left clavicle is shortened and convex upwards—this, no doubt, from the abnormal contraction of the sterno-mastoid, which is tensely rigid, with its lower attachments very close to the integuments, which can be felt thinly gliding across them, imparting a sensation somewhat similar to that given by the tendo Achillis in equinus. The gait is rolling and ungraceful, and the sufferer (possessing many mental accomplishments) shunned society through a painful consciousness of her deformity.

Such an instance as this should hasten the abolition of a doctrine too commonly expressed in spinal affections, and to which this woman became a victim, "that the patient will outgrow the deformity."

The cases of wry neck which come under the notice of the surgeon (I allude to congenital wry neck and those beginning in early infancy, and exclude the spasmodic wry neck of adult females) may, I think, be practically divided into three varieties:—First, those which are not susceptible of material improvement; second, those which may be considerably improved, but in which complete rectification is not to be obtained; and third, those cases which may be completely cured. There can be no difficulty in the selection of incurable cases. The sterno-mastoid is, no doubt, the primary agent in the deformity, but its continued contraction produces consecutive evils, which render its condition of minor importance in the later stages of the affection; these are—structural shortening of the deeper muscles, layers of fascia, and, it may be inferred, other structures of the neck, an alteration in the articular relations of the vertebræ and their ligamentous attachments, producing a cervical rotary lateral curve, followed after a time by a compensating permanent lateral

curve in the dorsal region. As in specially aggravated and long-standing equino-varus, tenotomy and extension (invariably successful when properly adapted to suitable cases) will fail to cure, much more easily may it be conceived that in a corresponding case of wry neck, analogous in its pathology, but infinitely more complex in the structures involved, restorative measures may be abortive, and the surgeon's efforts and promises, being certainly based either on cupidity or ignorance, will end in failure or dissatisfaction.

The second class includes those cases where the spinal curves are partly formed, where the deeper structures of the neck seem to be chiefly in fault, and the contraction partially recurs on extension being withdrawn.

The third class includes all those cases which are recognised and treated early. This assertion would seem to imply that such a distortion as wry neck, under favourable circumstances, need never exist in the adult. This I believe to be true, and in over thirty cases of which I possess the records, except in class No. 2, I have seen no difficulty in overcoming the deformity.

I do not intend to make any reference to the intimate pathology of wry neck. There have been many exhaustive contributions to the subject, and it appears to me that theories based on speculation, while interesting, admit of little practical inference. I will assume, therefore, that wry neck is the result of a nerve influence exerted chiefly on the sterno-mastoid muscle, but also occasionally on the anterior fibres of the trapezius muscle; that the spinal accessory nerve, or its sources from the medulla oblongata or cervical cord, must be chiefly looked to as the nerve site of its production; that it is possible that the muscular and communicating branches of the cervical plexus may be involved in its production, as well as the spinal accessory, whose funiculi extend as far as the sixth cervical nerve; that it is analogous to talipes, strabismus, or other instances of abnormal muscular contraction. This inference I think corroborated from the following observations:—

In five cases there was a history of infantile convulsions.

In two cases talipes equinus co-existed.

In three cases there was strabismus.

In one case, which was, I think, at least unusual, it was accompanied by chorea, which had been associated with rheumatism.

Case II.—E. H., aged thirteen, a young girl of rather delicate appearance, was brought to me in August, 1878. Her parents gave the following history:—The February before she had contracted severe

articular rheumatism, and while convalescent chorea supervened. Under judicious treatment she had materially improved, but a permanent contraction of the left sterno-mastoid became apparent, which has rapidly increased. No voluntary or assisted effort can now straighten the neck, which remains in the position observed in the engraving (taken from a photograph), Fig. 1. There is no unequal development of the face, which is quite symmetrical, due of course to the recent onset of the case. There is no compensatory spinal curve.

Of this case I at once gave a confident prognosis; and on August 11, having the previous day applied the jacket as hereafter described, and provided a cap, I divided both lower attachments of the sterno-mastoid. An audible snap indicated the division of each set of fibres.

August 16th.—Has had no uneasiness. Having applied the cap, gentle traction was made in a direction contrary to that of the contracted sterno-mastoid.

Sept. 3rd.—Extension has been gradually increased with manipulation of the neck, twice daily since last report. This day all apparatus was removed, and photograph taken as in Fig. 2.

Fig. 1.

Fig. 2.

Case III.—J. W., aged twelve, a boy having the appearance of average health, came under my notice in June, 1877. Deformity observed in infancy, and has gradually increased (Fig. 3). Left sterno-mastoid tense, and not capable of elongation by any reasonable force. In addition to the primary cervical a compensatory dorsal curve well marked. In this case, while considerable improvement might be anticipated, I did not think (bearing in mind the changes which must have taken place in the deeper structures of the neck) that a complete restoration to symmetry could be promised.

June 20th.—Divided both lower attachments of sterno-mastoid with outer edge of trapezius fibres, which felt cord-like and tense to the fingers. This was done by making a small puncture in front of the edge of the muscle, and passing a blunt pointed tenotome to the requisite distance beneath its fibres. The tightened structure gave way with a distinct snap, affording obvious freedom by its division.

July 20th.—The same treatment has been persevered with as in the previous case. The sterno-mastoid is still an obstacle to extension. This, I think, may be accounted for by the fact that the degenerated muscle is an entirely inelastic structure, and that adhesions have occurred at the point of section of the muscle which prevent its further extension. Accordingly the muscle was divided at a point a little higher than before, and extension made immediately. Some venous hæmorrhage occurred, which was controlled by pressure.

August 10th.—A marked improvement is now seen, but yet the cure is incomplete. The parents are satisfied with his present condition, and object to the time and expense involved in the rectification of the spinal curve. It is to be hoped the case will not relapse. Fig. 4 (from a photograph) shows accurately his improved condition.

Fig. 3.

Fig. 4.

The appliances which have been in use for the application of extension in wry neck have seemed to me unsatisfactory, inasmuch as the mobility of the scapulæ, spinal column, ribs, or pelvis—to some of which an apparatus is usually adapted—interferes with the maintenance of a fixed point whence to extend the head. The same objection applies to the application of plasters to the integuments, which can in no available situation be perfectly fixed, and the plasters have the disadvantage of slipping and requiring

Fig. 5.

Fig. 6.

Drawn from a Photograph.

Forster & Co., Lith., Dublin.

constant adjustment. The plans I have lately constantly adopted are adaptations of Sayer's plaster spinal jacket, in two ways, uncomplicated and easy of application—one jacket being usually sufficient for the treatment. These varieties of treatment are depicted in Plate I., Figs. 5 and 6. In one a metal splint is wound into the jacket behind in the vertical axis. This is surmounted by a ball-and-socket joint, fixed by a screw, moving in every direction. To this is attached a steel mould, well padded and accurately fitted to the ramus and symphysis of the lower jaw. In this manner entire control of the movements of the head and neck is obtained, and extension can be accurately graduated as may be desired. In another way, light metal splints, four or five in number, may be woven into the jacket. On each of these a small button may be placed, at the outer surface of the upper extremity. A cap may now be applied to the head in the following manner, which will be found to be perfectly immovable:—First, a fillet, placed horizontally, with a double band behind, above and below the occipital protuberance; secondly, a vertical band, embracing the symphysis and joined above the vertex by a strong piece of elastic webbing, to allow for the movements of the jaw. To the frontal fillet this is fastened, as well as hooks for the attachment of elastic cords or bands, which may be buttoned to the upper extremity of the splints which are embedded in the jacket, and which afford a perfectly fixed point for extension.

ART. V.—*On the Use of Salicylic Acid and the Salicylates.*[a] By CHARLES ROLLESTON WOODS, M.D., Univ. Dubl.; Workhouse Infirmary, Toxteth Park, Liverpool.

SALICYLIC acid has been very much used since Dr. Maclagan, of Dundee, recommended the use of salicin in rheumatic fever, the duration of which disease it has reduced from weeks and months to that of days, and even hours, while the unpleasant factor of the disease—the hyperpyrexia—which often accompanies it, can be conveniently and easily got rid of in the majority of cases. In a healthy person salicylic acid produces symptoms more or less similar to those which we are accustomed to see produced by quinine—flushing of the face, of a dusky hue, produced on the

[a] Being a thesis read for the Degree of Doctor of Medicine in the University of Dublin.

least excitement; deafness and headache, and more especially frontal headache; the hand trembles; the patient starts at a slight noise, and complains of muscular twitchings and neuralgic pains; the pulse and temperature are little, if at all, affected, but the respirations are, perhaps, quickened and made deeper. Salicylic acid may be easily detected in the urine, perspiration, saliva, &c., by the purple colour produced by the addition of a few drops of the tincture of the perchloride of iron. The urine is rendered less acid, and the perspiration becomes neutral or alkaline—which may not, however, be caused by the salicylic acid, as the perspiration has been observed alkaline in the normal condition.

I may here give the result of an experiment made on a healthy man aged twenty-five years:—

At 4 o'clock, p.m., three hours after dinner, the bladder was emptied. The temperature was then taken—T. 98·4°; P. 80. Some fresh urine was passed, which was of an acid reaction. Blue litmus paper, which was coloured red by the addition of an ounce of urine, required 25 minims of liq. potassæ to turn it blue again. 60 grains of salicylic acid administered. 5 o'clock, p.m.—T. 98·7°. 15 minims of liq. potassæ turned reddened litmus blue. 7 o'clock, p.m.—T. 98·9°. 6 minims of liq. potassæ turned litmus reddened by an ounce of urine blue again. 8 o'clock, p.m.—5 drops of liq. potassæ turned the reddened litmus blue. This condition remained till next morning, when 5 drops were still required to turn the reddened litmus blue. The urine gave an indication of salicylic acid in ten minutes after the dose was administered, and still a trace was found seventy-two hours afterwards. Muscular tremor, headache, neuralgic pains, nervousness, apathy, were complained of; and the subject operated on stated that his eyes pained him if he read, and that he was easily startled.

Having discovered the effects of salicylic acid in the healthy body, I found it of great help to me in my investigations of its uses in disease. I have used salicylic acid in the treatment of rheumatic fever, and published the results of some of the cases in *The Medical Press and Circular*. The average time during which the drug was administered before relief was obtained was two days. The treatment was continued for a week, and the patients kept under observation for three weeks or a month, as these cases are liable to relapse if not watched. As to the effect of salicylic acid lessening the risk of heart disease in rheumatic fever, if the salicylic acid lessens or destroys the inflammation of fibrous tissue in the joints, it will probably do the same in the heart, when the heart affection

occurs early, or where, as in two of my cases, the heart affection lasted from the first, and was probably the first fibrous tissue attacked; but, if the heart is not attacked at first, it may escape, from the fact of the disease being cut short which might otherwise have affected the heart. However, it is certain that it does not entirely protect the heart, as cases arise in which the heart becomes affected while the patient is under the full influence of the drug. In subacute rheumatism I have found salicylic acid very beneficial, but I have found no benefit arising from the drug in chronic rheumatism or in rheumatic gout—in fine, I believe that in rheumatism, in proportion as the temperature is high, so is the chance of salicylic acid doing good proportionally increased.

I have used salicylic acid in the treatment of other febrile diseases, especially scarlatina and pneumonia, and it seemed to me to be very beneficial, especially in the hyperpyrexia which accompanies them; and I can call to mind some patients who died of scarlatina in twenty-four hours after the commencement of the disease, whose lives I think I could have saved had I known the beneficial effects of salicylic acid in this disease. The cases of scarlatina and pneumonia in which I tried this remedy improved after its administration, and convalesced rapidly—one case, particularly, of pneumonia, in which the temperature fell from 105° on the evening of the seventh day to 99° on the morning of the eighth day, after the administration of 20-gr. doses of salicylic acid every two hours, until six powders were taken. The temperature then fell to normal, and the patient made a rapid recovery. In cases of simple fever, and in typhus and typhoid fever, I have used it, but with no very satisfactory results, except that of reducing the temperature, and also of relieving the tympanitic distension occurring in cases of typhoid fever. I think also in those cases of fever in which the temperature seems inclined to rise instead of falling at the time of crisis, this remedy is of signal benefit—hastening the crisis, and, I believe, saving the lives of some of our patients.

It has appeared to me, however, that if we reduce the temperature in the middle of an attack of fever we do so at the risk of prolonging the disease (except of course in rheumatic fever) and delaying the crisis. I think, therefore, that the indiscriminate use of antipyretics during a fever is wrought with danger, and only to be had recourse to under such circumstances as would lead us to fear that the hyperpyrexia might be having a deleterious effect on the body.

I think gynæcologists must have noticed the tendency of the temperature of women after childbirth to rise on the slightest indisposition, and more especially among nervous, excitable women; and the same may occasionally be noticed after large operations (excluding of course cases of pyæmia and puerperal fever), accompanied sometimes with a roseolar rash, as happened in a case communicated to the Liverpool Medical Institute by Mr. Chauncy Puzey, occurring in a patient after resection of the knee-joint. In hyperpyrexia of this kind salicylic is very useful, lowering the temperature and quieting the patient.

In a case of this kind which lately came under my notice the temperature rose to 103·6° on the 7th day, and the patient complained of pain in the abdomen and nervousness; 20 grs. of salicylic acid every 3 hours reduced the temperature to normal in 12 hours, and the patient made a good recovery.

There are a few cases reported in which salicylic acid failed to reduce the temperature or to relieve the patient, but these cases are very few, and ones in which small doses were given—too small indeed to have any effect on the disease.

The toxic effects of salicylic acid in the healthy subject being like those of quinine, I was tempted to give it a trial in some nervous affections—such as neuralgia, nervous headache, sciatica, &c., and I am glad to be able to say I have not been disappointed. I have used it with success in cases of nervous headache occurring in anæmic people, women after profuse flooding, &c. In neuralgia occurring under any circumstances it has proved very useful, especially in a case of neuralgia affecting the forehead and right side of the head, which defied every other kind of treatment except hypodermic injection of morphia, to which latterly the patient was getting too much used, and it sometimes failed to have the desired effect of relieving the pain. The administration of 10 grs. of salicylic acid every three hours in this case allays the agonising pain the patient has suffered from for months, and which had kept her confined to bed for the majority of that time. In lumbago and sciatica it has been more successful than any other remedy that I have tried; and I have just cured a case of sciatica with it for which every remedy that has been recommended had been tried without the slightest effect.

The toxic effects which I have noticed as occurring in healthy subjects sometimes appear when the drug is administered in disease, the more so as it is necessary to approach this stage before the full

benefit of the treatment is realised. Deafness and singing in the ears were the symptoms I most noticed occurring in most of the patients in which toxic symptoms appeared; headache was not so frequent, delirium occurred in one, and in another I noticed a vesicular rash extending from the neck to the gluteal region on each side of the spine. These symptoms, Stricker observes, occur more frequently in old and feeble subjects than in young ones; but I cannot say that I have noticed this. The vesicular rash occurred in a healthy young girl aged twenty, and the deafness and singing in the ears I have known to occur in private patients. These unpleasant symptoms may be counteracted by the use of a remedy which I learned from a paper read before the Liverpool Medical Institute by Dr. Caton—namely, hydrobromic acid. It is not advisable, however, to give the medicines together, as they form a thick jelly in combination, which would not look well if sent home to our patients in a bottle.

A very practical point is, which preparation is most efficient? Most observers have confined their experience to the use of one preparation, and if, as is said, they all assume the same form in the system (that of salicyluric acid) they will be all of equal value if given in equivalent doses. I am sorry I have not tried salicin, as, from the reports of cases treated by this remedy, it appears to act efficaciously and not to produce disagreeable symptoms, while it is soluble and not so unpleasant as the salicylate of soda. Salicylic acid itself, I believe, gives the best results if given in equal doses with its salts, but the great difficulty of giving it in powder, and of forming stable solutions, have induced some to use salicylate of soda—a soluble salt, but of unpleasant taste, and one with which some of my observations were made, but I left off using all preparations of salicylic acid for one which I think is superior to the others—namely, a powder containing equal parts of salicylic acid and bicarbonate of potash. This powder effervesces in an ounce of water, a soluble salt of salicylate of potash being formed. I generally order 20 grs. of each to be taken every two hours until relief is obtained, but if any special indication exists I order 30 grs. of each every second hour. The powders are not so large as we might at first imagine, as the compression which the salicylic acid undergoes with the bicarbonate of potash reduces that otherwise fluffy powder to a small bulk.

Salicylic acid is a very powerful disinfectant. After a trial of various antiseptics I have come to the conclusion that salicylic acid

is the best known remedy for cleansing wounds or for checking fermentation, and for this reason is very beneficial in the treatment of ulcerated legs with foul discharge, and also in the treatment of flatulence arising from fermentation of the food. Salicylic acid rubbed up with glycerine—℥i. ad. ℥ ii.—is an excellent application for ulcers, and the same formula I have used with great success in the treatment of thrush and aphthous ulcerations in the mouth.

THE USE OF THE ACTUAL CAUTERY IN MEDICINE.

Dr. C. E. Seguin, in the *Archives of Medicine* for April, 1879 (*N. Y. Med. Rec.*), says that in choosing a cautery, it is always advisable to select one with a platinum tip, since this metal will not become rough from long usage. The Paquelin benzine cautery is the most serviceable one hitherto invented, the only objection being its great cost. The Brown-Séquard cautery (which merely consists of an olive-pointed steel cautery iron about 30 ctms. long, the olive being about 15 mm. in diameter at the base, and carefully covered with platinum) will, however, answer all practical purposes. This may be heated to a white heat in a grate-fire. The method of application usually adopted is that called "cautérisation transcurrente" by Jobert and Notta, which consists in making very light parallel strokes with the cautery at white-heat over the part chosen as the seat of counter-irritation. From four to twelve strokes can be made in a very short space of time, and with very little suffering; only the cuticle should be affected in order to avoid subsequent suppuration. One error to be avoided is striking hard at the beginning of the strokes, since this causes blistering and suppuration. The only dressing required is the application of a piece of linen. It is often desirable to repeat the cauterisation frequently. In spinal affections we may begin at the top and cauterise the entire spinal region systematically and repeatedly by means of daily or tri-weekly applications. The majority of patients consider the pain very slight. It is highly unphysiological to freeze the skin previous to the application of the cautery. Superficial cauterisation with the actual platinum cautery has been satisfactorily used in the following conditions:—1, neuralgia, acute and chronic, of the trigeminus and of the peripheral nerves; 2, spinal irritation and various cerebral paræsthesiæ (pressure, numbness, &c.); 3, spinal congestion; 4, various forms of myelitis, acute and subacute; 5, epilepsy; 6, intercostal pain; 7, lumbago, acute and chronic; 8, articular inflammation; 9, peri-arthritis (chronic rheumatism?), especially of the shoulder.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Collected Works of Dr. P. M. Latham, *with Memoir by* Sir Thomas Watson, Bart., M.D. Edited for the Society by Robert Martin, M.D., Cantab.; Fellow of the Royal College of Physicians; late Physician to St. Bartholomew's Hospital. In two volumes. Vol. I. The New Sydenham Society. 1876.

Accidental circumstances prevented an earlier notice of this volume; and even now it is scarcely necessary to dwell at length upon its well-known contents. When Dr. Latham's lectures on Diseases of the Heart appeared thirty-four years ago they were received by the profession with marks of considerable favour. It was not the author's intention to vie with the comprehensive treatise of Hope. As he tells us in the preface, the lectures were delivered for a limited purpose—"to regard the diseases of the heart only in one point of view—*i.e.*, as they appear in the living man." No undertaking could be more legitimate; in no better way could the physician to a great hospital discharge the obligations which he owes to his profession. Comments made upon conditions accurately noted may be erroneous, the train of reasoning deduced from them fallacious, but the facts themselves remain available for the solution of problems ever presenting themselves in the advance of medical science. Indeed the author of the lectures was not unconscious of the value of observations made at the bedside. We are told in the "In Memoriam" by Sir Thomas Watson that when Dr. Latham quitted St. Bartholomew's he presented to the library of the Hospital between fifty and sixty volumes of completed case books, and that some years afterwards he expressed his disappointment that his well-trained observations had not been turned to account. "It cannot be doubted," says Sir Thomas, "that those volumes contain a mine of precious material which would amply repay the search of any one who, having the requisite talent, might have the privilege of exploring it."

In this work, however, Dr. Latham scarcely confines himself to his purpose; nor was it to be expected that a physician of his

attainments would rest satisfied with a bare record of facts—the notes of conditions which precede, accompany, and follow disease. No doubt there is a natural desire to make the knowledge obtained fruitful, "to gain honour from mankind from the sense of benefits conferred." But to ensure that what is taught will stand the test of time it is necessary that the different branches of medical science should be studied with diligence and care, and that full advantage should be taken of the information acquired in explaining the complex processes of disease. Hence it is not surprising that, even at the time of the first publication of the lectures, adverse comments should have been made upon the comparative slight put by the author upon the cultivation of the sciences of pathology and diagnosis, whilst an undue weight was attached to the therapeutics of diseases as a means of ascertaining their nature. To a certain extent we concur with the observations made as to the want of sufficient attention being given to the study of the treatment of different morbid states. But this defect is due to the absence of any broad scientific basis upon which a system of therapeutics can be raised. Now, as in Latham's time, most plans of treatment are eminently empirical, using the word in its etymological sense. It may, indeed, be worthy of consideration to determine how far we are right in treating disease by what may be looked upon as a series of experiments. Pushing the question of treatment to its limits, we appear to have but two alternatives left to us in dealing with most diseases—either to leave them altogether to the processes of natural evolution, because we do not see indications for the administration of any special agent or understand its *modus operandi;* or, resting satisfied with probabilities where certainties are not to be had, we may treat our patients according to the light derived solely from experimentation and experience. It is lamentably evident how imperfect is the latter alternative. The prolific production of new medicines—most of them, no doubt, potent for neither good nor evil—the want of uniformity of different observations, the different mental powers of the various observers, the faith that lets us see only what we desire to see, the tendency of fashion to smile upon what is new and mysterious—all have rendered the treatment of disease in most instances as haphazard and unscientific as the art of homœopathy. Of course the lessons taught by practical physicians like Dr. Latham are not to be despised. The authority of such men helps to give us the rough sketch; let us hope others of equal mind will add the light and shade to complete the picture.

It would not be doing justice to the labours of the author if we were to judge the subject-matter of the thirty-eight lectures comprising the volume before us with the teaching of the present day. We should have good cause for regret if after the lapse of over thirty years nothing had been added to our knowledge of the symptoms and physical signs of heart disease. Granting the editor's just appreciation of the grand broad outline which Dr. Latham gave us of cardiac lesions, we consider that in many instances throughout the work annotations both corrective and explanatory might have been introduced without the risk of being regarded as presumptuous or hypercritical. The wisdom of the Council of the New Sydenham Society in reprinting a work accessible to all in the different medical libraries, but which from the date of its publication cannot now be regarded as a text-book for either student or practitioner, may be fairly questioned. The span of our lives is unhappily too short to permit of our keeping pace with the progress of the different branches of medical science, and at the same time familiarising ourselves with works to a great extent out of date, but from which the pith has been culled by modern writers. We are not insensible of the originality of the author's reflections, of the value of his facts, of his graces of style and purity of diction, but still we think a republication of his lectures without any attempt to modernise them satisfies a want which can scarcely be said to have existed.

There are many points touched upon in the lectures which are specially interesting from the exact correspondence of the author's observations with what may be noted by every clinical physician. In Lecture III. attention is called to the influence of exercise and rest upon the existence of cardiac murmur. The author observes—"Where we can make the murmur come and go at will simply by augmenting and reducing the force of the heart's action, it is reasonable to believe that there may be a mechanical obstacle at an orifice of the heart, but that it is of small amount, not enough to cause the requisite degree of vibration when the current of blood is slow and undisturbed, but quite enough when it is more rapid and forcible." It must not, however, be forgotten that murmurs which are influenced by exercise and rest may be developed in the heart quite independently of any organic change. Moreover, in many instances, an augmentation in the force of the heart's action removes a murmur which had existed during repose. A soft blowing murmur replacing the first sound at the mitral area is not

unfrequently observed after a severe attack of acute articular rheumatism, or after a prolonged fever where there has been much sweating and subsequent prostration. This murmur may often be made disappear by getting the patient to move about briskly, whilst it is found to return, especially in the recumbent posture, after a period of repose. Murmurs of this character entirely vanish when the strength of the patient is restored.

Some interesting remarks are then made on the production of cardiac murmur in cases where the chest is deformed. We are told that a murmur of a loud whizzing character may be produced either by the heart being dragged out of its position by encroachment on it of the vertebral column and the approximation of the ribs, or that it may be developed by pressure made by the stethoscope over the præcordial region.

The author next directs attention to the occurrence of a loud systolic murmur over the pulmonary area. He says—"Of such a murmur, often audible in this situation exclusively, I am certain as a matter of fact, and certain too of its very remarkable accompaniments. I have witnessed it either in those who were undeniably consumptive, or in those who were too justly suspected of being so. I cannot say in what proportion of the phthisical it occurs, but I am continually meeting with it." These remarks are worthy of notice in connexion with Quincke's observations on the murmur in question. We are quite in accord with Dr. Latham as to its very common occurrence. Altogether the lecture on heart, blood, and venous murmurs is one of the most practical and useful of the series.

In one of the lectures on endocarditis the author calls attention to the existence of præcordial pain as an early symptom of the disease, and as one affording an indication for active treatment. Referring to the presence of this symptom, Dr. Latham says:—"If we have begun the treatment only a single day sooner than we otherwise should have done, we may have perfectly cured the disease which but for the gain of this single day would never have been more than half cured. The gain of a single day in the treatment of endocarditis is a gain indeed!" We do not think the occurrence of præcordial pain in endocarditis is sufficiently frequent to give us much aid in the diagnosis of the lesion, nor are we as sanguine as Dr. Latham was as to our power of arresting its progress when established. The prolongation and roughness of one of the cardiac sounds referred to by the author is a sign upon which

we would place more reliance for the early diagnosis of the inflammation.

Lecture IX. gives an account of inflammation of the lungs accompanying acute rheumatism either alone or in combination with endocarditis, or with pericarditis, or with both. In this and some succeeding lectures the question of treatment is specially considered. Some important observations are made upon the use of mercury in inflammation in general, and in rheumatic endocarditis and pericarditis. It cannot, however, be pretended that the views expressed upon this subject are those which are entertained by most physicians of the present day.

If space permitted we would refer specially to the lectures dealing with the effects of unsound heart upon the general vascular system and upon the secondary diseases produced by it. They are models of terse and vigorous writing, and amply show the depth of thought of the author.

We cannot conclude the reference to the work before us without noticing Sir Thomas Watson's sketch of the author's life. It is a fitting and apparently unexaggerated tribute of respect to the memory of a distinguished physician and cherished friend. The account given of the constant and unremitting care bestowed upon his hospital patients evinces Latham's thoroughness in regarding the treatment of disease as the paramount object of the physician. No one who reads the "In Memoriam" can fail to appreciate the spirit in which he worked, the unselfish zeal, the imperative sense of duty which guided all his efforts. He seems, indeed, to have been an "example of that peculiarly English character—the unobtrusive but accomplished and high-minded English gentleman." The influence which such a man was likely to have exercised upon his generation may be gleaned from the concluding words of the "In Memoriam:"—

> "Ripe in years as he was, and ready in spirit for the solemn change, his death must long be the subject of tender and sacred regret amongst the nearest and dearest of his surviving family and friends; nor will his memory cease to be reverently cherished throughout a much wider circle.
>
> 'Multis ille bonis flebilis occidit,
> Nulli flebilior quam mihi.'"

May it be long in the ripeness of years before the same change stills the hand which penned these lines.

Since the above was written we received Vol. II. of "Latham's

Works." It consists of a number of lectures on subjects connected with clinical medicine, an account of the diseases prevalent at the dispensary with which Dr. Latham was connected, and reprints of papers upon the use of opium in fevers; general remarks upon the practice of medicine, and observations on medical education.

In many respects we consider the volume of much greater value to the profession than that upon "Diseases of the Heart." The different subjects are dealt with in a way which will always render them fresh to the reader from the peculiarly original bent of the writer's mind, and the acuteness of his reasoning. We quite agree with the editor that "where all are so admirable, it were perhaps well to avoid the singling out of any one as though pre-eminently good." If we made any exception to this, it would be to specially direct attention to the articles on "Treatment" and "Cure." We commend their perusal to all practical physicians.

C. J. Nixon, M.B.

Parasites: a Treatise on the Entozoa of Man and Animals, including some account of the Ectozoa. By T. S. Cobbold, M.D., F.R.S., F.L.S., &c. London: J. & A. Churchill. 1879. 8vo. Pp. 508.

In this volume Dr. Cobbold gives us the results of his own and others' labours in human and comparative helminthology. It may be considered an entirely new book; for, although the author's treatise on Entozoa is out of print, he has preferred in the present instance to employ only such fragmentary portions of the old treatise as would harmonise with the far wider design he has now in view. He tells us that minute anatomical details have been purposely omitted, as well as, with few exceptions, the introduction of clinical details, his principal object being "to supply abundance of original matter of a kind that cannot be found in the columns of any existing treatise." In this he has succeeded, and one cannot help admiring the untiring energy he has displayed both in original investigation, experimentation, and in the collection of references to the literature of the subjects upon which he writes.

Although the author does not profess to enter into the curative treatment of parasitic affections, yet valuable hints as to prevention are here and there thrown out, though perhaps most of them could be summed up in two words—"isolation" and "filtration." We agree with him when he insists upon the importance of the study of parasites in the lower animals, for we must remember that "a

large proportion of the strictly human entozoa require a change of hosts, or, in other words, need to pass through the bodies of the lower animals."

Parasites are divided in this book into the following groups, each of which is again divided into sub-groups or families:—

I. Flukes—Trematoda.
II. Tape-worms—Cestoda, including measles and bladder-worms.
III. Round-worms—Nematoda, including thread-worms.
IV. Thornheaded-worms—Acanthocephala.
V. Annelid parasites.
VI. Arachnid parasites.
VII. Crustacean parasites.
VIII. Insect parasites.
IX. Protozoal parasites.

These groups are considered separately, and a full bibliographical catalogue follows the description of each parasite—this is the distinguishing feature of the book.

With regard to the *Fasciola hepatica* (common liver-fluke), we are told that twenty instances of its occurrence in the human body have been recorded—beneath the skin in the sole of the foot, under the scalp, and behind the ear, as well as in its most usual position, the liver and gall-ducts.

Three instances of the occurrence of *Distoma lanceolatum*, the lancet-shaped fluke, have been recorded in man—in one case the flukes co-existed with gall-stones, and Dr. Cobbold suggests the possibility that the dead distomes may have formed the nuclei of the gall-stones.

In the description of *Distoma crassum* (Busk), it is suggested, apparently with some amount of reason, that Ningpo oysters, or some species of marine shell-fish sold in Eastern markets, may have been the direct source of the parasite.

Passing over the *Distoma sinense*, *D. conjunctum*, *D. heterophyes*, *D. ophthalmobium*, *Tetrastoma renale*, and *Amphistoma hominis*, we come to the *Bilharzia hæmatobia*—the cause of the endemic hæmaturia of the Cape of Good Hope. A good description of this curious parasite is given, "the female of which is lodged in the gynæcophoric canal of the male during the copulatory act;" and a full account of the structure and formation of the ova follows. Dr. Cobbold supposed that the intermediate host of the Bilharzia might

be found among fresh-water molluscs and small crustaceans, but was disappointed; he then sought for the larvæ among fluviatile and marine fishes. The same idea seems to have struck Dr. Aitken, who, in his "Report to the Army Medical Department, 1868," gave a figure of a nurse-form, which he termed "a cercaria from the tail of a haddock," suggesting for Bilharzia some genetic relation. "Dr. Aitken," says Cobbold, "also extends his views in reference to certain larval trematodes alleged to have been found in the so-called Delhi boils and Lahore sores. These parasitic forms have, however, been shown by Dr. Fleming to be nothing more than altered hair-bulbs." Again—"In regard to flukes from the haddock, I have satisfied myself that the immature trematodes from the nerves of the cod-tribe can have no genetic relation with Bilharzia." In fact, our author's experiments were all negative.

The helminthiasis produced by Bilharzia is described in most text-books, so that we need hardly recapitulate it; cases are frequent in Egypt, which are "characterised by a general disturbance of the uropoietic functions." In the advanced stages diarrhœa and hæmaturia occur, being frequently associated with "so-called" Egyptian chlorosis, colicky pains, anæmia, and great prostration of the vital powers. The diagnosis may be missed if the urine and other evacuations are not examined with the microscope. The *post mortem* appearances consist in patches of blood-extravasation at the mucous surface of the bladder in cases which have not advanced far, while in more strongly-pronounced cases we find the patches larger, or even confluent. In some cases there are villous or fungus-like thickenings, ulceration and separation of portions of the mucous membrane, with varying degrees of coloration, according to the amount of the extravasation, which becomes converted into gray, rusty-brown, or black pigment deposits. The lining membranes of the ureters and renal cavities are also more or less affected, the kidneys being frequently enlarged and congested. The lining membrane of the intestine is affected like that of the bladder. The true seat of the disorder is the blood, which forms the proper habitat of the Bilharzia; and the worms and their eggs may be found in any of the vessels supplying the diseased organs. In one instance Leuckart and Griesinger found empty eggs in the left ventricle of the heart. The parasites are more particularly prevalent in the vessels of the bladder, the mesentery, and portal system. We are told that slow running streams and stagnant pools with sedgy banks are favourable to the existence and multiplication of these

entozoa, and consequently their waters are dangerous for drinking purposes.

That part of the book which treats of tape-worms will be found especially useful to students of sanitary science. It contains an account of numerous interesting experiments upon calves and heifers, from which (pp. 58 and 59) it will be seen that the exhibition of portions of *tænia mediocanellata* to calves and heifers produces *cysticercus bovis* or *measles* in them—our attention being called to the interesting fact that the measles not only occur in the voluntary muscles, but also in other organs; and further, that measles may be *absent* from the muscles and present in the liver, as was the case in one of Dr. Cobbold's calves. An animal suffering from measles may exhibit no signs of constitutional disturbance; and "the cestode tuberculosis may come and go without any diagnostic symptom, whilst a few months suffice for the natural death and decay of the parasite by calcareous degeneration." Hence the practical deduction that it is only necessary to isolate an animal suffering from measles for six or eight months to bring about a spontaneous cure. To Dr. Cobbold we owe the knowledge which puts thus tersely the fact that "all kinds of tape-worm larvæ, measles, bladder-worms, cœnuri, and so forth, *have a natural life-epoch assigned to them.*"

For an account of the experiments of Pelizzari, Tommasi, Perroncito, and Giacomini, we must refer to the book itself; it will suffice to say that they in no way contravene the experiments of Lewis, who proved that a temperature of 140° Fahrenheit was sufficient to destroy the vitality of cysticerci of all kinds.

The students of Perroncito had no reason to adore the master who made some "breeding" experiments upon them, by which he proved that they could eat cysticerci heated to 45°, 47°, or even 44° C., with negative results. Another student was fool enough to eat a living cysticercus of the *tænia mediocanellata*, and had the satisfaction, or at least gave Perroncito the satisfaction, of getting rid of two proglottides at the end of fifty-four days; at the end of sixty-seven days he took a dose of kousso and castor-oil, and emitted the strobila, furnished with 866 rings, but destitute of head and neck. Dr. Cobbold himself seems to have a taste for the consumption of his own game, as he ate some animals upon which he had experimented. He, however, reminds us, while speaking of *tænia solium*, of the danger of handling fresh tape-worms, as we might get their eggs under our nails or on our clothes, and so

swallow them. We are also reminded of the danger of eating salads which may have been manured with night-soil containing, it may be, myriads of tape-worms' eggs. Again—"One individual suffering from tape-worm may infect a whole neighbourhood by rendering the swine measly, these animals in their turn spreading the disease far and wide."

The description of the *Echinococcus hominis* (common hydatid) is very interesting, and will repay careful perusal; it is, as most of us know, the juvenile stage of the *tænia echinococcus* of the dog and wolf. Iceland and Australia both enjoy an unenviable share of hydatid disease—the former on account of the habits of the people, who keep a great number of dogs, each peasant on an average possessing six, which share the same dwelling, and often eat off the same plate as their master. Hitherto no one has seen the *tænia echinococcus* in an English dog except when made the subject of experiment, but Dr. Cobbold thinks that English dogs are as much, if not more, infested than Continental ones.

The *trichina spiralis* and the helminthiasis caused by it are well described, and the significant remark made that not a single instance of trichina disease has been observed by British physicians in actual practice, although as many as thirty or forty instances occurred where the parasites had been found *post mortem*.

Almost everyone who reads the medical journals is aware of the discovery made by Drs. Lewis and Cunningham—viz., that the blood of patients suffering from chyluria contains a parasite named by the discoverers *filaria sanguinis hominis*, but few are aware of the recent advances which have been made in the study of the development of this entozoon, and of the flood of light which the developmental history has thrown upon the pathology of certain diseases which now are shown to be closely connected with chyluria, though on a superficial examination they have apparently no relation to it.

To this entozoon Cobbold gives the name *Filaria Bancrofti* (though to us his reasons for changing Lewis's name are not apparent). We must refer to the book itself for an account of its discovery, but, as we said above, the discovery and its further prosecution have led such pathological conditions as elephantiasis scroti, leprosy, chyluria, intertropical endemic hæmaturia, and certain lymphoid affections, to be classed close together, the same hæmatozoon having been found in the blood of persons suffering from these diseases by Dr. Manson and by others.

At the same time we must remember that a dog may have 200,000 filariæ in his blood, and yet present no apparent symptom of disease. Dr. Manson has but recently made the curious discovery that larvæ of the *filaria sanguinis hominis* occur in the stomach of the mosquito. The mosquito, after gorging itself on the blood of its human victim, proceeds to some stagnant pool to digest its meal and deposit its eggs. While there a period of four days the filaria undergoes remarkable changes in the body of the mosquito, until it finally emerges in a more perfect state into the water; it is then carried into the bodies of those who are foolish enough to drink the water without filtration. Dr. Lewis has, since the publication of Manson's discovery, come to the conclusion, from having found birds' blood corpuscles in the mosquitos' stomachs with the hæmatozoon, and for other reasons, that the filariæ are developed in the bodies of birds before they take up their abode in the stomach of the mosquito.

The common and despicable *oxyuris vermicularis* receives its due share of attention at the hands of the author, who, after describing its anatomy, tells us that infection ordinarily takes place by the accidental and direct conveyance of the eggs that are lodged in the neighbourhood of the victim's anus to the mouth. The case of one aristocratic person is mentioned "who was infested by myriads of these entozoa," and who "confessed to me that, in his extreme rage, he had freely bitten the live worms between his teeth. He had thus exposed himself to a terrible revenge, since multitudes of the ova entering his mouth subsequently found their way into the stomach and intestines." Eating with unwashed hands, we are told, is another source of infection, as people are apt to have the ova of the *oxyuris* under their nails or on their fingers.

There are a great many more most interesting facts in Dr. Cobbold's book which our space precludes our mentioning, but what we have said will enable the reader to judge of the merits of this book. It is the most important contribution to the literature of helminthology which has appeared of late years, and every page bears witness to the energy, originality, and learning of its author.

Dublin Hospital Sunday Fund. Report of the Council for the Year 1878. Dublin: Browne and Nolan. 1879. 8vo, pp. 57.

The philanthropic movement known under the name of the "Dublin Hospital Sunday Fund" continues to make satisfactory

progress. The annual collection for 1878 was made in 230 places of worship on Sunday, November 10. The total amount collected by congregations and individuals was £4,300 18s. 11d., which is an increase of £194 4s. 5d. as compared with 1877. The Council divided £3,975 among the fifteen participating hospitals. The working expenses amounted to £287, being 6·67 per cent. of the amount collected.

The most important work done by the Council during the year was the carrying out of an inquiry into the arrangements for nursing in each of the participating hospitals. In considering the question of existing nursing arrangements, a Committee specially appointed by the Council inquired into the (1) supervision of nursing, (2) qualifications and training of nurses, (3) organisation of nursing, (4) wages, board, clothing, and lodging of nurses, and (5) rest and relaxation of nurses. Many defects were brought to light, but the practical outcome of the whole inquiry is to be found in the following recommendations made by the Committee and adopted by the Council:—

"1. Each hospital should have a lady superintendent, whose sole duty should be to supervise the nursing, and teach all nurses and probationers the details of nursing. To be qualified to understand this work efficiently, she should have attended a course of lectures on subjects connected with nursing, given by a medical officer of an hospital, and be certified that she is fully capable of carrying out hospital nursing in all its details, as well as of giving systematic instruction to those who may be placed under her. She should also have served an apprenticeship of at least a year in some general hospital in which nurses are trained.

"2. The hospital buildings should be so arranged as to admit of the classification of the wards into suitable divisions for nursing purposes.

"3. In each group of wards there should be a responsible head nurse, with such day and night assistant-nurses as the hospital authorities may deem necessary.

"4. All nurses and assistant-nurses should be properly qualified and trained, and assistant-nurses should not undertake the duties of ward-maids or scrubbers.

"5. The duties of head nurses, assistant-nurses, and wardmaids should be accurately defined by printed rules, to be hung up conspicuously in the wards.

"6. Better accommodation should be provided for the sleeping and dieting of nurses than those at present in existence; they should be much better paid, and should be permitted daily relaxation and periodical holidays.

"7. Every hospital should take its part in the training of nurses, either by having a training establishment of its own or by co-operating with other hospitals through a central training establishment.

"8. All hospital authorities should provide dinners for the nurses and assistant-nurses, to be served in a special room at a fixed hour; nurses to dine first, assistant-nurses immediately afterwards. If alcoholic drinks are permitted, they should be supplied by the hospital and served at dinner time.

"9. In every hospital coffee or tea should be supplied to the night nurses on duty at about midnight.

"10. Nurses should not be permitted to cook the patients' meals.

"11. In every hospital ward a printed placard should be hung up, informing patients that if nurses, assistant-nurses, or wardmaids solicit or receive money from them, they will be subject to instant dismissal.

"12. Nurses and assistant-nurses should be provided with bed-rooms separate from the wards, so as to insure them undisturbed rest when off duty."

We understand that these recommendations have been forwarded to all the participating institutions, and that measures are being taken by the hospital authorities in several instances to carry them into effect as far as possible.

RECENT WORKS ON TYPHOID FEVER.

1. *Typhoid Fever: its Cause and Extent in Melbourne, based on the Report of an Inquiry made by special request of the Central Board of Health, and presented to both Houses of Parliament by His Excellency's command.* By William Thomson, F.R.C.S. Third Edition, Revised. Melbourne, Sydney, and Adelaide: George Robertson. 1878.
2. *Remarks on a Review of the Report on the Cause and Extent of Typhoid Fever in Melbourne.* Same author and publisher. 1879.

The works before us are written with the view of proving that typhoid fever is contagious, and, further, that it spreads by contagion alone. In these countries it is not necessary to prove the infective nature of *typhoid*, or, as we think it is more correctly termed, *enteric* fever. We may at once state that the first of the two works gives very substantial proof that enteric fever is communicable. It appears that in Melbourne, and, indeed, in the Colony of Victoria generally, there are two parties taking opposite

views with respect to the causes of enteric fever. One party maintains that the disease originates in contagion, and contagion alone—the other, that it is a non-contagious malady, and is generated *de novo* by decomposing filth. We regret to find that Dr. Thomson has written as a partisan, and, while joining the contagionists, does not hesitate to revile his opponents. Thus, when introducing an example, he says:—"Another capital example of the *arrant nonsense* talked in the *infatuated belief* of a dirt-bred typhoid poison happened in autumn of 1875 at the scattered village, Essendon, six miles west of Melbourne." The italics are ours. We consider a medical man who can indulge in such language as the above in a discussion which he professes to enter upon in a scientific and logical spirit, diminishes to a large extent the weight of his arguments when measured by scientific standards. Dr. Thomson seems to ignore the fact that by proving the infective nature of enteric fever, he does not in any way disprove its pythogenic origin. Dr. Thomson falls into the not uncommon error of assuming that a number of affections differently denominated by various observers are all typhoid. He gives a number of these, and seems to treat with contempt the idea that any of those which he chooses to think were typhoid may have been anything else. Thus he remarks:—"Besides these [enumerated previously], the phrases 'muco-enteritis,' 'infantile remittent,' 'paludal typhoid,' &c., &c., are often employed, but it is unnecessary to state that no such varieties of fever exist in nature." We cannot agree with this statement. We have seen many cases which may be fairly described as "muco-enteritis," and which certainly were not enteric fever. We know of such cases—specially cases of "catarrhal diarrhœa"—where the mistake was not an unnatural one. Again, we are informed by Dr. Thomson:—"Wherever cases of genuine typhoid have occurred, any cases of less pronounced type appearing at the same time in the same neighbourhood may be put down as modified or abortive cases of the same specific fever." The author admits his main object to be to disprove spontaneous origin, in the following passage referring to the importation of typhoid fever by the ships "Sam Carius" and "Golden Empire," when he says:—"This contagion importation is particularly urged, because, unless clear proof be adduced of carried contagion, the alternative is to admit spontaneous origin." Is the alternative so terrible? The spontaneous origin of disease seems to be quite a bugbear to Dr. Thomson.

We have said enough to show the author's bias against spontaneous origin of enteric fever; but while we have thus severely criticised his method of argument, we have much pleasure in stating that more substantial and convincing proofs of the infective nature of enteric fever are not to be found in any work. Unless we were to give the details of the instances adduced by the author to illustrate the spread of enteric fever by contagion, we could not do justice to the care and ability with which he has worked out this part of his subject. The seasonal influence on the prevalence of enteric fever is carefully dealt with by Dr. Thomson. The disease is most prevalent in Victoria in May, and least prevalent in November. These months are exactly the converse of those of greatest and least prevalence in the northern hemisphere, as shown in a graphic diagram where the seasonal prevalence of the disease is compared at Melbourne, Berlin, Basle, and London. Thus the seasons of greatest prevalence correspond exactly in the northern and southern hemispheres. This is a very important and interesting fact. Another interesting point is that autumnal outbreaks of enteric fever are usually preceded by an increase of diarrhœa in Melbourne, just as they have been shown by Dr. Murchison to be so preceded in England. Dr. Thomson infers from the greater prevalence of enteric fever in warm and dry weather that the enteric contagion, "on being exposed to dry hot air, becomes crisped into a fine impalpable dust, easily borne on the wind, and when inhaled, or mixing with drinking water or food, and therewith ingested, excites fever," &c. We quite agree with the author that this is an efficient mode of spreading the disease; it does not, however, dispose of the pythogenic theory for the origin of enteric fever.

We have read Dr. Thomson's book with great pleasure, and, while we object to his extreme partisanship, we can easily find an excuse for him in the irritating and culpable way in which the Central Board of Health ignored the possibility of the spread of enteric fever by contagion, and appear to have been more occupied in making excuses for the presence of the disease, than taking measures to destroy contagion, and thereby prevent its spread. We commend the study of Dr. Thomson's book to those who desire accurate information relative to the way enteric fever conducts itself at the antipodes.

T. W. Grimshaw, M.A., M.D.

The Germ Theories of Infectious Diseases. By JOHN DRYSDALE, M.D. London: Baillière & Co. Liverpool: Holden. 1878.

IN this pamphlet, reprinted from the "Transactions of the Literary and Philosophical Society of Liverpool," the President of the Society has produced an able review of the various germ theories of infectious disease. The theories are ably discussed and fairly dealt with, and the paper affords ample evidence of the extensive information possessed by the author. We cannot undertake to review a work which is itself a review, but can heartily recommend it to those who take an interest in the theories and facts connected with the intimate nature of contagion.

Clinical Lectures on Diseases of the Urinary Organs. By SIR HENRY THOMPSON. Fifth Edition. London: J. & A. Churchill. 1879. 8vo. Pp. 355.

THE fifth edition of these Lectures is now before us. Like each of the preceding editions it has been revised and added to. The number of Lectures, originally twelve, has been increased to twenty-four. What Sir Henry Thompson was pleased to call the colloquial style in which he first delivered them is preserved throughout, and renders them not only easy to read but almost amusing. At the same time each page is replete with practical instruction, a vast accumulation of knowledge—the harvest of many years' experience—accurate observation, and labour. As a book of reference this volume is perfect; it not only has a good index, but is furnished with marginal notes, which enable the reader with ease to refer to any part of the text.

The first lecture is devoted to the diagnosis of urinary diseases; and as the correct diagnosis of disease is the first and most important step towards combating it, so is this lecture the most important and instructive in the whole course.

The author points out the importance of making a rapid diagnosis; and with this object he recommends the adoption of an "uniform system." He asks four concise questions of each new patient, and from the answers to them in the majority of cases a correct opinion as to the nature of the disease may be arrived at. The unnecessary use of instruments he condemns in strong terms; and it would be well for mankind and the reputation of surgery were his views on this subject universally adopted. He lays down

the following important principles:—"All instruments are evils, more or less considerable, never to be resorted to unless a greater evil be present, which their employment may probably remedy." Again he says—"No man is justified in passing a catheter for another until he has first passed one for himself." If all practitioners, especially young ones, were to adopt these two principles, we would not often see the unfortunate consequences which so commonly follow the abuse of the catheter and the sound.

In speaking of the endoscope as a means of diagnosis in disease of the bladder and urethra, he refers to that of Dr. Cruise, of Dublin, as "a better instrument than we heretofore possessed;" but he adds, "if a man has good and tolerably practised hands, and a fair share of intelligence, I do not think that he will gain a great deal by the endoscope; and if he has not I think it will be of no use at all."

It would be impossible, in a short review of this kind, to attempt to criticise each of these lectures; but speaking of them collectively as a treatise on an important class of diseases, they constitute a most complete and exhaustive work. That it has been translated into most of the modern languages, and is employed as a text-book in most of the medical schools in Europe, is a fact of which the author is justly proud, and is sufficient proof of the value of his work. We recommend it not only as a text-book to the student, but as a most valuable book of reference for all practitioners, but especially for operating surgeons.

WORKS ON DISEASES OF THE SKIN.

A Handbook on the Diagnosis of Skin Diseases. By Robert Liveing, M.D. London: Longmans, Green, & Co. 1878. Pp. 266.

Some time ago we had the pleasure of noticing favourably Dr. Liveing's excellent little compendium of the treatment of skin diseases, and we have now to congratulate him on the production of a companion work on Diagnosis, for which we anticipate a cordial reception. The book is admirably written; it is clear in style, compact in matter, and reliable in its teaching; and, after a careful examination of its contents, we must say that it is the best elementary work on dermatology that we know of, and that it fairly and concisely represents the present state of our knowledge of that subject.

We had marked many passages for comment, although very little for criticism, and will content ourselves with directing the attention of students to Chapter I. as a useful and instructive introduction to the best method of observing diseases of the skin, and to Chapter II. for some sensible remarks on the elementary lesions of the skin, and their value as a means of diagnosis and classification. In the next issue we should like to see the "Notes on the Treatment of Skin Diseases" incorporated with the text of this volume, and we should then have a happy combination of theory and practice which would satisfactorily fill a gap in our literature, and would supply practitioners with a complete and practical handbook on cutaneous affections.

Lectures on Dermatology, delivered in the Royal College of Surgeons of England in 1876, 1877, 1878. By Erasmus Wilson, F.R.S. London: J. & A. Churchill. 1878. Pp. 286.

The present volume concludes the nine courses of Lectures delivered in the Royal College of Surgeons of England by Mr. Wilson, who founded and munificently endowed the chair of Dermatology in 1869. The contents of this work are devoted to derangements of colour of the skin, to disorders of the epidermic system and nails, to the hair and its follicles, and to the sebaceous and sudatory gland systems; and many novel and interesting details are supplied from Mr. Wilson's long and varied experience, and from his extensive acquaintance with medical literature. It is a pity that at the end of this volume we are not furnished with a general index to the four volumes, which include a complete review of the whole series of diseases of the skin, as conveyed in Mr. Wilson's annual courses of lectures from 1869 to 1878; and, with all due respect for Mr. Wilson's contributions to dermatology, and for his veteran position, we suspect that the circle of his readers would be vastly increased if some friendly editor could set to work and compress the bulky material of these four volumes into one book of moderate size.

The Antagonism of Therapeutic Agents, and what it teaches. By J. Milner Fothergill, M.D. London: Macmillan & Co. 1878. Pp. 150.

It may be a question whether the subject of medicinal antagonism is yet ripe enough to justify the production of a treatise upon it, and, while according due credit to Dr. Fothergill for his labours in

this important inquiry, we cannot help regretting that he did not delay the publication of this essay until his materials had become more matured. The book bears signs of having been hastily put together, is unequal in execution, and is disfigured by many careless misprints. The earlier portion of the volume gives a summary of the principal results obtained by Fraser and others, and illustrates the action of drugs upon the circulation and respiration. The history of the action and therapeutic uses of digitalis is, as we might expect, more fully detailed than that of other drugs; and the author develops the views expressed in his essay on Digitalis, which is now out of print. The two concluding chapters sketch in a clear and suggestive way the application of the doctrine of antagonism of drugs in the treatment of toxic cases and in cases occurring in ordinary practice, and these sections might with advantage have been amplified and more fully illustrated.

RECENT STUDENTS' BOOKS.

1. *Aids to Chemistry.* Part II.—Inorganic. Pp. 60. 2. *Outlines of Medicine.* (*Aids to Medicine.* Part I.) Pp. 66. 3. *Aids to Chemistry.* Part III.—Organic. Pp. 114. By Armand Semple, M.B., Cantab. London: Baillière, Tindall, & Cox. 1879.

We have, on a former occasion (Vol. LXIV., p. 524), expressed our opinion of some former similar publications of Mr. Semple's for the use of students; and we have no reason to alter that opinion from an inspection of those now before us.

Essentials of Chemistry, Inorganic and Organic. By R. A. Witthaus, A.M., M.D., Professor of Chemistry in the Medical Department University of Vermont, &c. New York: William Wood & Co. 1879. Pp. 257.

This neat little book comprises, in the form of question and answer, a useful catechism of chemistry, and is especially adapted for medical students.

Although the catechetical style is not, in our opinion, adapted for acquiring a knowledge of chemistry from, Dr. Witthaus' book will be found useful in impressing previously-learned facts, in refreshing the memory on essential points, and in teaching students

how they should endeavour to answer questions at their examinations.

The questions, which are 1,024 in number, include a wide range of chemical subjects; the answers being given in a clear, terse, and, as far as we have seen, accurate manner. We would particularly notice the portion of the work bearing on the compounds of carbon—especially the sections on the alcohols—as illustrative of this. Physiological chemistry has its full share of attention, and the therapeutical and medico-legal bearings of the science are not omitted.

Illustrirte Vierteljahrsschrift der ärztlichen Polytechnik. Herausgegeben von Dr. G. Beck. Bern und Leipzig. Nos. I. & II. 1879.

This publication is likely to prove useful to a large circle of readers. It contains a description of new instruments and apparatus belonging to every branch of medicine and surgery. The descriptions are illustrated by engravings, and, in almost every instance, the price of the instrument and the name and address of the maker are given. Some of the descriptions are original, but the greater number are taken from other sources.

THE USE OF CALCIUM SULPHIDE IN THE TREATMENT OF INFLAMMATIONS OF THE EXTERNAL AUDITORY MEATUS.

Dr. Samuel Sexton, in a paper published in the January (1879) number of the *American Journal of Otology*, gives his own observations on the use of this drug in the painful affections alluded to. Dr. Sexton states that in furuncular inflammation of the meatus the sulphide can be used to advantage when suppuration threatens, or even after it has occurred. He has frequently observed furuncles, under the use of this remedy, to abort and dry up without discharge of pus. In some instances he relies entirely on the remedy in the treatment of inflammation of the ear. The prevention of a continuance or a return of furuncles, etc., by this remedy he regards as very clearly possible, provided no remote cause be left. The dose which Dr. Sexton has found most available is one-tenth of a grain, to be given every two or three hours in urgent cases. In cases with a tendency to chronicity, with less frequency. In children the dose should be less; an adult dose being diffused in water, the amount given can be easily graduated. The medicine is more agreeable when triturated with sugar of milk, when it may be given dry on the tongue.—*N. Y. Med. Record.*

PART III.

HALF-YEARLY REPORTS.

REPORT ON SURGERY.

By William Thomson, A.B., M.D., F.R.C.S.; Surgeon to the Richmond, Whitworth, and Hardwicke Hospitals; and Member of the Surgical Court of Examiners, Royal College of Surgeons.

THE TREATMENT OF ABDOMINAL OBSTRUCTION.

The doctrines enunciated by Mr. Jonathan Hutchinson regarding the treatment of abdominal obstruction, and published in the last Report, have met with some opposition, particularly from Mr. T. P. Teale, of Leeds. At the Yorkshire Branch meeting (*Brit. Med. Jour.*, Jan. 11, 1879) he read a paper in which he declared exploration of the abdominal cavity in such cases to be justifiable on two cardinal grounds—"firstly, the mere opening of the peritoneal cavity is not necessarily a dangerous operation; secondly, there are many cases of obstruction of the bowels which must prove fatal unless relief can be given, which can only be rightly directed by means of exploration of the abdominal cavity." In hernia, for instance, we think nothing of pulling out and handling coils of intestine, and we rarely look for danger unless the bowel have been damaged by too long strangulation. In ovariotomy the dangers arise mainly from the fluids poured out from adhesions and divided vessels—dangers which are, as a rule, absent in gastrotomy. Six cases of abdominal section are noted—one recovered, but the others died, having been operated on in the last stage of exhaustion. Mr. Teale asks—"May we not look forward to a time when we shall treat peritonitis—traumatic, ovarian, or puerperal—by opening and washing out the abdominal cavity, and emptying the intestines?"

Mr. Blaker (*ibid.*) relates a case in which obstruction took place in a child aged seven months. She suddenly screamed, and immediately afterwards became collapsed, pale, and cold. The pain was paroxysmal. A distinct but ill-defined tumour, about an inch and a half in its longest diameter, could be felt at a spot about two inches to the left of the umbilicus. A drachm of dark blood came

from the anus. The child was chloroformed and placed on a table with the nates well raised. Gruel was slowly injected, and when a pint had been introduced, the abdomen became tense, and the distended bowel could be felt like a hard rope, an inch in diameter, across the upper part of the abdomen, almost as far as the right iliac region. A good deal of the gruel escaped, but next morning the tumour had quite disappeared, and during the day the child passed a copious motion.

In a case published by Dr. Day, of the Samaritan Hospital (*Brit. Med. Jour.*, May 31, 1879), the attack was also very sudden, in a child aged two and a half years. The patient was attacked on the 23rd of February; next day there was a small motion; on the 2nd of March about a drachm of fæcal matter; and he was admitted to hospital on the 4th of March, exhausted and helpless. No descent of the bowel could be felt in the rectum. There was no distension, dulness, or prominence of the abdomen. Belladonna was administered, and, in consultation with Mr. S. Wells and Mr. Meredith, it was agreed to use an injection of warm water. A tube was passed up to the sigmoid flexure, about two yards of India-rubber tubing were attached, and then warm water was gently poured through it from a funnel, at a varying height, according to the effect produced, but it soon returned, to the amount of about a pint. In the evening flatus passed, and the child could retain milk in the stomach; next morning the bowels acted loosely, and on the 8th they were acting regularly.

Dr. Clifford Allbutt, of the Leeds Infirmary, publishes two cases of abdominal section by Mr. Dowse (*Brit. Med. Jour.*, May 31, 1879) for obstruction. The first was in a man aged sixty, who was suddenly attacked with pain in the left side. A knotty tumour was found high up, close to the short ribs, which was thought to be either an intussusception or some undigested food lodged there. He was treated with ice, belladonna, opium and henbane, and enemata. As the patient was sinking, an operation was performed, on April 23rd, five days after the first attack. The obstruction was found at the commencement of the jejunum, in the form of a stony concretion of the size of a pullet's egg. As it could neither be passed backwards nor forwards, it was removed through a longitudinal incision in the bowel. The bowel was so thinned from pressure that, although it was well stitched with carbolised catgut, it could not hold together. The patient died in four hours.

In the second case the patient was aged fifty-six, and had been

suffering from constipation for about a month. He had suffered from inflammation of the bowels sixteen or seventeen years previously. Belladonna was administered. As the patient was sinking, an operation was performed. Two bands of lymph were found across the bowel, close to the sigmoid flexure. On dividing these the bowels were almost immediately relieved of a large quantity of accumulated fæces. He made a good recovery, and died some time afterwards from rupture of a blood-vessel while coughing.

The subject is further discussed by Dr. Allbutt, in the *British Medical Journal* for January, 1879, as follows:—

"One very important distinction, however, is closely before us—namely, whether the obstruction be acute or chronic. Under this head, I wish to draw attention especially to the fact that early acuteness depends much upon the nature and rate of the cause; and to this other side of the same thing, that chronic obstruction often puts in an acute appearance. This I may call late acuteness. I have found in practice that there is a danger of mistaking late acuteness for early acuteness. I need not record cases, as they are not uncommon, in which malignant disease of the bowel or its neighbourhood is suddenly revealed by symptoms of acute obstruction occurring in a person hitherto seemingly in good health. In such a case, intussusception, volvulus, internal hernia, and the like, may be suspected when the real cause is malignant stricture. Such an error may, I believe, be generally avoided if the possibility of it be before the practitioner. In each case we shall probably find some symptoms to aid us, and two especially I have found of use—firstly, that, before such obstruction becomes acutely manifest, its earlier degrees have been counteracted by hypertrophy of the gut above the point, so that in moderately thin people coils of intestine may be seen and felt upon the abdominal surface, and may be brought into still greater prominence by manipulation; secondly, that, as a consequence of this hypertrophy, the injecta are swept too hastily down to the seat of obstruction, and are forced through it in great measure unabsorbed. Such persons lose flesh in spite of fair appetite, and will, if questioned, speak decidedly of the great increase in the volume of their stools for some time previously. Violent ejections of wind from the rectum are also noticed in the history of such cases, and for the same reason. Malignant obstructions again in the lower colon may often be reached by a stem and ball, by the hand, or even by the finger in the bowel, and thus diagnosis is made positive. In the majority of cases, however, the nature of the stricture may be inferred with tolerable certainty from the previous history of the case and from other present signs and symptoms. Obstruction from local inflammation is not so urgent nor so complete as in the other cases named.

"Moreover, although peristalsis may cease at the spot, matters will drop

by gravitation into the length below, and insoluble remnants of recently taken food may be recognised in the motions. Fæcal accumulation is generally to be made out by its history, symptoms, and signs. Gall-stone obstructions in my experience are always to be ascertained by reference to past hepatic colic; and polypoid obstructions resemble gradual stricture in their development, are fortunately rare, and are often within reach of touch. Intussusceptions and hernial obstructions alone remain, and intussusception is practically a hernia of bowel into bowel. Yet, happily, the distinction is generally to be made by reference to the age of the patient, and by searching the abdomen for a tumour, and the stools for blood. A past history of peritonitis would suggest the presence of bands, bridles, or dislocations.

"In dealing with obstruction of the bowels, the lesson I am never tired of enforcing here, as in all cases, is that therapeutics depend upon diagnosis. Make diagnosis accurate and complete, and treatment will come. This is the reply students should receive time after time, when they will ask what is good for this disease or that disease. Never mind the name of the disease, but make out precisely what state of things you have before you in the individual case, and you will rarely be at a loss for treatment.

"Obstruction of the bowels, then, may be really acute or really chronic; or, again, acute obstruction may occur in the course of chronic obstruction, and may even be the first revelation of it. With care we can generally clear our case under this head. Chronic obstructions have to be dealt with according to the special features of each case, and we have plenty of time to weigh our opinions and to adjust our healing measures. When drugs fail us, the surgeon comes to our aid and makes an artificial anus. Acute obstruction occurring in the course of chronic obstruction is generally to be reduced to its chronic state by rest and subcutaneous morphia.

"Let us, then, dispose thus hastily of all cases of essentially chronic obstruction. They rarely need heroic action or great presence of mind either in physician or in surgeon. We thus clear our way to the essentially acute cases; and we have found that in these inflammation always counts for something, generally for a good deal. Now, whether we know exactly how to deal with the main cause or not, we always know how to deal with the inflammation; and, except in the extremest urgency, our first duty is to simplify our case by lessening this. Unfortunately, means are often used which tend rather to aggravate the enteritis, and of all these injections into the bowel are the most mischievous. Even in the case of fæcal accumulation, it is not the fæcal mass, but the inflammation set up by it, to which the explosion is due, so that even in these cases it is wild practice to pump into the inflamed bowel and to drag the patient hither and thither in bed. Even for diagnostic purposes, enemata

are rated far too highly, and are rarely of much service. Clearly, it is our duty to reduce our case by complete rest, opiates, fomentations, and a leech or two to the abdomen or anus until the enteritis subsides, and then we can deal as we see fit with its cause. But, if enemata are abused in fæcal accumulation wherein they are chiefly valuable, what are we to say of the fashion of forcing their employment in cases of internal strangulation? It is certainly conceivable that an intussusception may be unfolded by a forcible and ample injection, or by the insufflation of air, but to force air or water against a knotted or snared loop of intestine is surely outrageous meddling. And yet I have never been called into a case of such obstruction without finding that such a measure has been assiduously employed, to the harass of the patient, to the aggravation of the symptoms, and to the increase of inflammation around the obstruction. I believe no formula can be drawn from our experience of more value than this—namely, that *if rest in every way be sedulously enforced, and the inflammation which palsies the bowel be carefully combated by the use of sedatives such as opium and belladonna, and other means, cases of obstruction of the bowels tend to recovery.*"

DOUBLE OÖPHORECTOMY, OR BATTEY'S OPERATION.[a]

Dr. A. R. Simpson (*Brit. Med. Jour.*, May 24, 1879) reports a successful case of double oöphorectomy. The patient was forty-eight years of age. She began to menstruate at twelve; her suffering, which was always very great, beginning a week before the flow, and continuing through the week of the discharge. Stimulants, sedatives, &c., were administered to lull the pain, and for many years her medical attendant was obliged to keep her under chloroform when she was at her worst every month. She suffered much from hæmorrhoids, which were removed in 1872, and she improved in health very much, but the menstrual pain remained unrelieved. Dr. Simpson hinted at the possibility of relieving her by operation; she reminded him of it some time later, and pressed its performance, observing that it was not she but the doctor who was afraid. The operation was undertaken in June, 1878. An incision two and a half inches long was made in the linea alba, the lower angle being half an inch above the upper margin of the pubic bone. There was considerable difficulty in recognising the surface of the peritoneum, because the omentum stretched down behind it into the pelvis, and was partially adherent

[a] For a full account of this operation see Dr. A. V. Macan's "Report on Midwifery and Diseases of Women" in the number of this Journal for September, 1878, Vol. LXVI., page 216.

at the point of perforation. Two fingers were passed into the pelvis along the right fallopian tube, and the right ovary was readily found and pulled through the abdominal wall. The organ was then removed, and the left was treated in the same way, the pedicles being secured with silk. On the 23rd June, thirteen days after the operation, the patient was sitting up. In July a menstrual discharge came on, but it was of shorter duration and attended with far less disturbance than she had ever experienced. In August, for the first time for twenty-six years, she passed the dreaded week without any catamenial flow, and without being obliged to keep her bed. There was a slight appearance and some suffering in September. In October and November she was well. In December there was a slight and almost painless discharge. In January and February, 1879, she remained well; and in March there was some of the old pain for a day only. The uterus was then becoming distinctly reduced.

The first to perform the operation was Hegar, of Freiburg, in July, 1872; but it was first successfully done by Battey, of Rome, Georgia, U.S.A., in August, 1872, without knowing that it had been previously suggested or attempted. The operation has since been done many times on one ovary; but Simpson is only able to collect thirty-five cases in which both normal ovaries were removed. The indications for the operation have been dysmenorrhœa, menorrhagia, amenorrhœa, threatened insanity, convulsions, and hystero-epilepsy. The mortality has been very high as compared with ovariotomy—viz., 37·1 per cent. As to the results, only 9 were fairly cured, 11 were greatly improved, and 2 were uncured.

EVACUATION OF ABSCESS OF THE BRAIN.

Mr. J. D. Hulke reports a case (*Brit. Med. Jour.*, March 15, 1879) in which he successfully evacuated a cerebral abscess. A boy striking his forehead against a fence, frayed it, and was momentarily stunned. He continued to work for five or six weeks, during which time he had more or less pain in the forehead; then retchings and hemiplegia supervened. The frontal bone was trephined at the seat of injury. A small fissure was recognised at its outer table. The dura mater seemed healthy. An aspirator trochar being pushed into the brain, pus rose into the syringe. The abscess was opened through the membranes with a knife, and in all three drachms of pus were let out. The patient recovered, but lost the sight of both eyes from optic neuritis.

NERVE SURGERY—NERVE STRETCHING.

Nussbaum reports an interesting case in the *Aertztliches Intelligenz Blatt.*, No. 53, 1878 (*Med. Rec.*, March 15, 1879). A gentleman had for twenty years suffered from severe intercostal rheumatism, which yielded to none of the ordinary remedies. The attacks at times continued during two or three months, the paroxysms continuing for two or three hours. The affected nerves were clearly the terminal abdominal branches of the 8th, 9th, and 10th intercostal on each side. It was necessary to find two spots where without dangerous wounding these nerves could be exposed and manipulated. Two vertical incisions were made at a hands-breadth from the outer margin of the rectus on each side, and in the epigastric region. Each nerve was taken between the thumb and forefinger, and slowly and forcibly stretched. On the right side there was some difficulty in exposing the nerves, and the peritoneum was wounded. The edges were brought together with catgut, however, and the nerves were then stretched as on the other side. The wounds healed without trouble, and there has been no return of the affection.

Duplay (*Soc. de Chirurgie*, Dec., 1878, and *Med. Rec.*, Jan., 1879) reports two cases. A man was wounded in the forearm with a knife, and after the wound had healed it was found that the muscles supplied by the radial and median nerves were paralysed; the skin of the forearm had lost its sensibility at some points, and at others there was hyperæsthesia. Both nerves were exposed and stretched. Next day sensibility in the affected parts was noted, the hyperæsthesia disappeared, and the muscles were no longer paralysed. There was no relapse. In a second case a painful spot existed in a cicatrix resulting from a wound at the wrist. A small tumour was discovered in connexion with the ulnar nerve, which was stretched, and the tumour disappeared. The interossei muscles regained their contractility, and the pain was removed. There was no relapse.

THE SUTURE OF NERVES.

Bakowiecki (*Gaz. Méd. de Paris*, Oct., 1878, *Med. Rec.*, Feb., 1879) finds that the suture of nerves considerably hastens their cicatrisation and the re-establishment of their functions. The ends must be brought together within twenty-four hours; the sutures must pass through the neurilemma only; and catgut must be used.

Suture prevents the appearance of tetanus. The experiments were one hundred in number, and included the sciatic, vagus, and hypoglossal.

EXCISION OF PART OF THE SPINAL ACCESSORY NERVE FOR WRY NECK.

Annandale, of Edinburgh (*Lancet*, April, 1879, and *Med. Rec.*, June 15, 1879), records a successful case of this operation. A young woman, twenty-four, suffered from spasmodic movements rotating the head towards the left side. Other treatment having failed, the left spinal accessory nerve was exposed and stretched in the sterno-mastoid muscle, and a silk ligature was placed loosely upon it, in order to facilitate the finding of it again, if necessary. After twenty-four hours, there being no improvement, the nerve was raised by the ligature and divided, and in a few hours it was found that the patient could move her head towards the right and keep her face looking steadily forwards. She recovered perfectly.

TREATMENT OF THE RESULTS OF ENLARGED PROSTATE.

Sir Henry Thompson, in a paper read before the Medico-Chirurgical Society (*Brit. Med. Jour.*, June 7, 1879), asks whether, when a patient had long ceased to pass urine by his own efforts, and had to pass the catheter with great frequency, and often with pain and difficulty, it might not be desirable to place a tube *en permanence* in the bladder, making an opening above the pubis for the purpose. This might be safely and simply done by means of a staff, as in the high operation for stone. But, as in these cases, the bladder was usually small and contracted, it was to be opened rather *behind* than *above* the symphysis pubis, so as to make certain of not wounding the peritoneum. This might be done without difficulty. In performing the operation a curved hollow sound was used, having a stilet with a bulbous end. The sound being introduced into the bladder, a point was made to project against the walls of the organ just behind the symphysis. A small incision being then made, the end of the staff was sought with the finger, and the bladder carefully perforated, care being taken not to make the incision too large, so as to avoid the escape of urine by the side of the tube to be introduced. A gum elastic tube, having a shield like that of a tracheotomy tube, was then passed into the end of the sound (the stilet having been withdrawn), and thus introduced into the bladder. Some care was subsequently required to keep

the tube clean; but the relief produced was great. The author had applied the proceeding only in very rare cases, with the view of rendering the remains of a closing life tolerable. It had been done with good results in three cases of hypertrophied prostate, one of cancer, and one of villous tumour. He asked whether it might not be advisable to adopt such a procedure in some instances at a somewhat earlier period in such cases.

URETHRISMUS, OR CHRONIC SPASMODIC STRICTURE.

Professor Otis has published a defence of his belief in this condition, which has been assailed by Dr. Sands, of New York (*N. Y. Hospital Gaz.*, Feb. 13 and April 19, 1879). His conclusions are based upon several cases, the details of which have been already given to the profession. The doctrine which he advocates has been held by some of the most eminent surgeons. He claims that "the presence of the slightest contraction at any point may be accepted as capable of producing reflex irritation, which may result in a spasmodic stricture which shall possess all the recognised characteristics of deep organic stricture;" and, further, "that no reliable examination of the deeper urethra can ever be made while a stricture or even an erosion is present in the anterior part of the canal." One of his illustrative cases is as follows:—

"Case I.—J. W., frontiersman, aged forty-five, came under my notice Nov., 1874, with a history of first gonorrhœa, twenty years previously, and several subsequent attacks. Five years after, began to have difficulty in passing his urine. Stream grew gradually smaller, until, following a debauch, he had complete retention of urine, and was obliged to seek relief at a neighbouring military post. After thirty-six hours' suffering, he was relieved, through the passage of a very small, flexible catheter, by the hands of the post surgeon. Subsequently to this, he submitted to treatment by dilatation for several months. He then learned to pass No. 12, English, soft bougie. From neglect he has had some half a dozen attacks of retention during the past year.

"At last, only the smallest instrument could be passed by the military surgeon, and he was advised to go East and have a radical operation performed, as 'there were no instruments at the post suitable to operate on so small a stricture.' The habit of the patient, for a long time, has been to pass his water very frequently during the day, in a fine, irregular stream, and several times during the night.

"Physical examination.—Is of large stature, looking like a strong man who had endured much exposure and hardship. Made his water, in my presence, in fine short jets and dribbling.

"Circumference of the penis 3½ inches, size of meatus 23 f.; No. 23 f., steel sound passed easily through a very sensitive urethra, to the bulbo-membranous junction, where it was arrested. Bougies in gradually decreasing sizes were introduced, until finally No. 12 f., passed into the bladder, closely hugged in the deep urethra. Allowing it to remain for a few moments, I found it free. I then withdrew it, divided the contracted meatus and stricture for nearly half an inch back, and passed 34 f., solid steel sound, slowly down to the bulbo-membranous junction, when it *slipped by its own weight into the bladder.*

"After the withdrawal of the sound, the patient passed his water in a full large stream. From this moment he had no further trouble in urination, passing his water at intervals of from six to eight hours during the day, and not at all at night, for the week subsequent to the operation, when he left for his home in the far West, apparently well in every respect."

Dr. Otis finds that in a large number of cases division of the meatus or some anterior stricture removes the cause of deeper reflex irritation, and is followed by immediate relief.

QUINIA IN VESICAL IRRITATION.

Dr. D. B. Simmons (*Amer. Jour. Sciences*, Jan., 1879) and Dr. Streets, U.S.A. (*Phil. Med. Times*, May 10, 1879), report cases in which the great irritability of the bladder from enlarged prostate and the presence of villous growth was allayed by large doses of quinia. Fifteen grains were given three times daily, and under this treatment the bladder lost irritability and recovered tone; the urine became clear and healthy.

CAMPHOR AS A HYPNOTIC.

Wittich has repeatedly administered camphor to relieve the insomnia which accompanies certain forms of mania, hysterical insanity, and hypochondria. He has found that under such conditions camphor acts much better than chloral, morphia, or bromide of potassium. He administers it by hypodermic injection. He dissolves it in olive oil, and the dose which he recommends is from one to one and a quarter grains. Small doses are more certain to produce sleep than large doses. The sedative effect, as a rule, appears rapidly, and the sleep produced lasts several hours. The injection is to be repeated when the restlessness reappears.—*Jour. de Méd. de Bordeaux.*

S. W.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

PROCEEDINGS OF THE DUBLIN OBSTETRICAL SOCIETY.

FORTY-FIRST ANNUAL SESSION.

EDWARD B. SINCLAIR, M.D., President.
WILLIAM ROE, M.D., Honorary Secretary.

Saturday, June 7, 1879.

E. B. SINCLAIR, M.D., President, in the Chair.

Abnormal Funis.

DR. RUTHERFOORD KIRKPATRICK exhibited a portion of a funis, the abnormal arrangement of which was presumed to be the cause of the death of the child during labour. The funis formed a loop, the sides of which were adherent to one another; and, in consequence of the pressure on the curve of the loop during labour, a clot formed, and the circulation stopped in the funis. Labour began with the discharge of the waters. As soon as the pains commenced strong uterine action set in. When he saw the patient he expected that the labour would be soon completed. On examination he found that it was a breech was presenting. The waters had come away about four hours before; the presenting part of the breech was very high, and the os was not quite one-half dilated. Very strong uterine action went on for some hours, without much progress in the labour, then ceased for six or eight hours, after which the os dilated rapidly, and the breech came down. There was no delay in the delivery of the child. When it was born there was no sign of life—no pulsation of the heart, no attempt at respiration. He tried the usual means of resuscitation, but without any effect. On separating the child, and drawing down the funis (the portion which he exhibited) from the vagina, the cause of death then became visible. The loop of the funis had been pressed against the uterine walls, and a thrombus caused, which stopped circulation—a state of affairs which could not

have been diagnosed during labour. From the account of the mother, he presumed the child was living up to the time when the uterine action ceased, four or five hours previous to delivery.

Hydatidiform Degeneration of a portion of Retained Placenta.

Dr. T. More Madden said: I beg to exhibit a specimen of hydatidiform disease recently removed from the uterus of a patient under my care in the Mater Misericordiæ Hospital. The circumstances of the case were as follows:—

E. G., aged thirty; married; eight children; admitted May 9th, 1879, suffering from persistent uterine hæmorrhage, which had continued since November last, when she miscarried at the seventh month. She stated that there had been no difficulty in her delivery, and that the labour was natural in every respect. On admission she was in a state of great exhaustion and completely blanched from loss of blood. Her pulse was 120, and so feeble as to be almost imperceptible at the wrist; and she complained of tinnitus aurium. The hæmorrhage was now a slight but incessant draining, with occasional gushes of blood on every exertion. Stimulants having been given, the uterus was examined, and found to be considerably enlarged, the sound passing in for nine inches. The os was contracted, but sufficiently dilatable to allow the introduction of seven sea-tangle tents; after which the vagina was securely plugged with sponge. On removing the tents next morning the cavity of the uterus, which admitted the hand, was found occupied by a large hydatidinous mass attached to the fundus uteri. The removal of this substance and of a small portion of firmly adherent placenta from which it grew required the repeated introduction of my hand, and was attended by considerable hæmorrhage, which was stopped by freely swabbing out the uterine cavity with fuming nitric acid. The hydatidinous product removed filled a small hand-basin, and is now shown to the Society. The hæmorrhage was immediately arrested, and the patient made a rapid recovery, and was discharged on the 30th May quite convalescent.

I have brought this case before the Society because it is the first instance I have met with in which so large a hydatidiform growth as this was evidently developed from a very small portion of adherent placenta retained *in utero*, and continuing its abnormal vitality for five months after childbirth, and under circumstances which prevented subsequent impregnation. A fragment of the retained placenta on examination proved to be in a state of fatty degeneration.

I venture to think that the history of all cases of placental disease should be recorded, since in the paucity of communications on the subject in the proceedings of our Society we find sufficient evidence that the diseases of the placenta have hardly yet attracted as much attention as their frequency and their practical importance demands. The obscurity

of the origin and the difficulty of diagnosis in placental diseases have to some extent been cleared away since the publication, some forty years ago, of the late Sir James Simpson's Memoirs "On Congestion and Inflammation of the Placenta," by the papers of Dr. Barnes "On Fatty Degeneration of the Placenta," in the 36th and 34th volumes of the "Medico-Chirurgical Transactions," and those of Dr. Graily Hewitt and Dr. Braxton Hicks, and a few others, in the "Transactions of the London Obstetrical Society." Still to the present day no subject of equal interest in a practical as well as in a physiological point of view remains in greater obscurity than the diseases of the placenta. It would be superfluous to dwell on the importance of this still-neglected field of investigation, or to do more than observe that being, as it is, the sole medium of vital communication between the fœtus *in utero* and the mother, any deviation from the normal condition of the placenta by which its development may be arrested and its physiological action impaired or perverted must be of serious consequence either to mother or child or to both. Amongst the diseases of this organ affecting the mother as well as the child are inflammations of the placenta, especially chronic or subacute placentitis, leading to morbid adhesions between the afterbirth and uterus, and occasionally giving rise to the two most serious complications of parturition—viz., *post partum* hæmorrhage and inversion of the uterus. Another placental disease of no less importance to the mother than to the child is congestion, sometimes resulting in hæmorrhage or placental apoplexy; whilst amongst the placental diseases which chiefly affect the fœtus by impairing or destroying the structural integrity of this organ are œdema, atrophy, and hypertrophy of the afterbirth, and the various forms of degeneration—fatty and calcareous; and, above all, that which was met with in this case—viz., hydatidinous or hydatidiform degeneration of the placenta. In my own practice I have now met with five cases of this disease, the infrequency of which appears from the following table:—

Authority	Cases admitted into the Rotunda Hospital	Cases of Hydatidinous Disease reported
Dr. Collins, - - -	16,654	–
Drs. Hardy and M'Clintock,	6,634	1
Drs. Sinclair and Johnston,	13,748	4

Thus it appears that in 31,036 cases admitted into the Lying-in Hospital there were only five instances of hydatidiform mole recorded, being in the proportion of 1 in 6,207 cases.

Hydatidinous disease of the placenta consists in degeneration and abnormal development of the placental chorionic villi, usually following, although occasionally producing, the death of the fœtus. In the "Dublin Obstetrical Transactions," 1874, I have related some cases of this kind. In most of these the hydatidiform mass was expelled from the uterus in

the fifth month of pregnancy. The symptoms of this disease can at first hardly be distinguished from those of ordinary pregnancy. If, however, in addition to the signs that usually denote the death of the fœtus, the patient experiences occasional gushes of water together with slight hæmorrhage from the uterus, lasting for a short time and recurring at irregular intervals, we may suspect the existence of hydatidiform disease in the placenta of a blighted fœtus. The expulsion of these growths from the uterus is generally attended with severe hæmorrhage. With regard to the origin of the hydatidiform products, it would be useless again to review the countless theories that have been put forward at different times. For my own part I still adhere to the views I published eleven years ago, that in the great majority of cases these growths originate in the cystic degeneration of the chorion villi of a blighted ovum, but that cases also occur in which they are found in the uterus independently of pregnancy. In such cases they originate in the ovary of an unimpregnated female from abnormal nutrition and perverted or monstrous development of a graafian vesicle, which on being expelled into the uterus there becomes adherent, and continues to increase until by its bulk it exerts expulsive action.

In the way of treatment I know of nothing that can be done to arrest the progress of the disease, but an attempt should always be made to prevent its recurrence by improving the general health of the patient by alteratives and ferruginous tonics, especially any of the saline chalybeate waters, such as Ems or Kissengen.

It has been recommended that we should bring on the expulsion of these so-called uterine hydatids as soon as they are discovered. This, however, is clearly wrong, for it is quite possible that only a portion of the placenta may be affected; or, as I have seen, the birth of a healthy living child may be immediately followed by the hydatidinous placenta of a blighted twin conception. Hence, even if this disease could be diagnosed at any time during the nine months of pregnancy, we should still let nature take her course, rather than by unnecessary interference run the risk of destroying a fœtus which experience has shown may possibly co-exist with the hydatidiform growth *in utero*.

URTICARIA—BISULPHITE OF SODA.

Dr. Carter, Mt. Jackson, Ind., states that the hypodermic injection of a saturated solution of bisulphite of soda in urticaria is the most prompt remedy in relieving this troublesome affection he has yet tried. It appears to act upon the periphery of the cutaneous nerves as does belladonna, except that the latter has a heating and the former a cooling effect.—*St. Louis Med. Jour.*

S. W.

PROCEEDINGS OF THE PATHOLOGICAL SOCIETY OF DUBLIN.

President—William Moore, M.D.
Secretary—E. H. Bennett, M.D.

Femoral Hernia fatal by Pneumonia.—Dr. Corley said: These specimens were taken on Wednesday last from the body of a patient who was admitted into the Richmond Hospital late on the previous Sunday evening. The history she gave of her case was as follows:—On the preceding Thursday she was seized with sudden pain in the abdomen, immediately attended by a vomiting and purging. The pain, vomiting, and purging continued almost incessantly until Saturday morning, when the purging ceased. The vomiting continued, and from the description she gave seemed to have been stercoraceous. On Sunday night she was admitted into the Richmond Hospital. I cannot say anything as to the treatment before she came in, but I suspect she got some opium, as is usual in such cases. The resident surgeon, who saw her on Sunday night, said that her symptoms were not pressing, that the vomiting soon decreased very much, and the pain also was much less than on admission. She had a lump in her right groin, and said she had suffered from it for something over a year. She said that at the commencement it was small, like a pea, and that it grew until it became the size of a hen's egg. I saw her on the next morning, and found that she was a thin, spare, emaciated woman, aged about sixty-four. Her abdomen was very much distended with gas, and its walls were so remarkably thin that the coils of intestine could be seen projecting, and could be moved with the hand from side to side. The lump in the groin was tender, but the tenderness was not more marked than it had been at the beginning. The vomiting had come on again during the night, and though not very urgent was decidedly stercoraceous in character. Her pulse was extremely feeble, and she showed other evidence of collapse and weakness. My colleague, Dr. Stokes, and I, after consultation, arrived at the conclusion that an operation was necessary. Accordingly, she was brought into the theatre, and we operated on Monday morning, when the following conditions of the parts became apparent. I may say that the operation was an extremely satisfactory one. It was done without any difficulty, and neither was there any difficulty in ascertaining the seat of the constriction; but it was obvious that the hernia could not be relieved without opening the sac. When that was done the first thing that came to view was this remarkable little lump. Our first impression was that it was the vermiform appendix. On the surface of it as well as of the protruding

intestines was some recent lymph, whilst both were congested and of a dark plum colour. Finding, however, that the little lump was attached to a small cord-like process, we gave up the idea that it was the appendix. We thought it better to return it to the abdomen with the intestine, the protruded portion of which, although of so dark a plum colour at the time, recovered so very much its appearance before the woman died that it is not easily recognisable now. On passing up my finger I found that the abdominal rings were free from any adhesion. The patient recovered from the ether, her pulse became better and stronger, and during two or three hours she improved. After she had been brought up to bed she had some vomiting, and I thought the symptom suspicious, and did not like it, but attributed it to the ether. The tympany did not subside at any time. Towards Monday evening the vomiting returned, and was still of a stercoraceous character. It was relieved first by ice and afterwards by champagne, but was only relieved without being stopped. When I saw her on Monday night the tympany was the only marked symptom she suffered from. It was not, however, sufficient to cause any difficulty of breathing, nor had it apparently any effect on the heart's action, which was good and strong that night. Her pulse was 120. Tenderness was present still, and the vomiting continued, but there was no cough or hurried respiration, or anything to direct attention away from the abdomen.

At two o'clock on Tuesday morning, forty hours after the operation, she died. I should have mentioned that her temperature never rose beyond 101°. She died apparently from exhaustion. The pain in the abdomen had not increased, and the only history I got was that her pulse seemed to get gradually fainter and fainter, and that exhaustion was the cause of death. The *post mortem* was made by Dr. Harvey, who found nothing in the abdomen to account for the symptoms beyond what you see, as far as constriction went. There was a general injection of the peritoneum indicating the first stage of peritonitis, and some traces of lymph in the intestine, but very little serum—probably a tablespoonful in the cavity of the pelvis. This reminds me that on opening the sac a large quantity of reddish serum poured out of it, and after the intestine had been restored a good deal of serum came away from the opening of the abdomen afterwards. I was satisfied that so far as the surgery of the case went we did everything that could have been done. On opening the chest, Dr. Harvey found well-marked pneumonia in both lungs, but of greater extent on the right than on the left side; and Dr. Harvey's opinion was that she died of pneumonia. She never showed any symptoms of it during the entire course of her illness. She had not complained of any difficulty of breathing or exhibited any other symptom while in hospital which would have directed us to examine her chest, and I was rather astonished at the result of Dr. Harvey's examination. He

has not examined the lungs, but I have directed his attention to a paragraph in an article on intestinal obstruction in Ziemssen's "Cyclopædia of Medicine" (article by Leichenstein on Intestinal Obstruction), in which he says that pneumonia is a common cause of death when stercoraceous vomiting has been persistent—the cause being that when the patient is half stupefied by the opium generally administered he inspires some of the stercoraceous matter which sets up a rapid pneumonia. Dr. Harvey intends making an examination of both the lungs of the patient in the present case, so that if that shall be found to have happened they may be subsequently shown to the Society. Although the intestine was of such a purplish blue character at the time of the operation as to make us consider whether we were justified in returning it into the abdomen, the reparatory process of the circulation had been so far restored that there is some difficulty in finding out the portion which had been constricted. The little tumour proved to be vermiform appendix, as we at first thought. Part of it was down in the hernial sac, at the neck of which it is constricted into a well-marked fibrous cord with some connective tissue round it. At first it had very much the appearance of an ovary which had undergone some change of shape, but we did not dwell long enough on it during the operation to make sure of what it was. Whether it was the result of the hernia of a year's standing or not, I cannot say. The hernia was femoral.—*February* 15, 1879.

Fracture of the Femur from direct violence.—Dr. Bennett said: This specimen is in many respects an ordinary one, and I bring it before you merely for the purpose of directing attention to one point in connexion with it. It illustrates the action of the wheel of a tram-car in injuring a limb. One night, early this week, about half-past eleven o'clock, a tram-car coming from Sandymount was passing along at a trot, close to the bridge over the canal, when it encountered an outside car which immediately afterwards was seen passing behind the tram-car without its driver. A man who was seated on the top of the tram-car stated that there was first a sudden and violent check of that vehicle and then a great crunch and a cry of pain, after which the tram-car was stopped. Everyone knows the extreme sharpness of the vibration produced by even a small stone under the wheel of a tram-car. On looking for the cause of the stoppage a man was found lying in the space between the two sets of rails, with his left leg between the wheels of the tram-car, the front wheel having evidently gone over the limb while the tram-car had been stopped before the hind wheel reached it. The limb was frightfully torn. The man was immediately brought to Sir Patrick Dun's Hospital. He was a young man of between twenty-two and twenty-three years of age, and—although it was afterwards reported that he was a person of extreme sobriety—was so excessively drunk that it was impossible to control or

manage him in any way. Whether it was the result of the shock of the injury or the result of his drunkenness he seemed to have no pain, and his great anxiety was to get up and walk home. There was violent jactitation of the limb, great loss of skin from near the knee to close to the hip—one belt of six inches wide having entirely disappeared—and the muscles were in rags and all oozing blood. I put him on the table as rapidly as I could and removed the lacerated thigh. It required merely a section of the skin and some pruning of the muscles to effect this. The femoral artery, in spite of all the laceration, when the tourniquet was relaxed, allowed the circulation to be felt in the tibial vessels. There is nothing special to say about the operation—the man was all but dead during the performance of it. He rallied a little, fell into a stertorous sleep on the operating table, where we were forced to leave him until about six o'clock in the morning, when he awoke, was violently convulsed, and died. There had been no hæmorrhage after the operation of any consequence. The injury to the bone consists of a double transverse toothed fracture of the femur. One is close to the knee, about two inches and a half above the condyles, and the other is close up to the attachment of the gluteus maximus muscle. The whole of the periosteal covering was stripped off, the bone was perfectly naked, and street mud was grained into the whole surface on the external side. The feature, which I have not seen in other fractures of the thigh, is of interest; the surface of the bone shows that the contact of the flange of the wheel with the bone was direct. We cannot tell which of the two fractures was the first and which the last, but on the outer side of the lower fragment there is this polished bevelling, which shows the rotation of the wheel, and there are also three facets showing where the wheel struck. There is also a groove extending along the whole of the middle fragment, on the outer side, with a slight interruption, and at the other end it passes off, the mark being quite polished.—*February* 15, 1879.

Comminuted Fracture of the Head of the Tibia.—Dr. Bennett said: This specimen is interesting on account of its rarity. In the museums of Dublin, rich in specimens of the fractures of long bones, there is no similar example. I regret I have no history of the specimen, for it was obtained in the dissecting room. However, we have certain important points demonstrated by the conditions of the bones of the limb from which it was obtained. The latest authority on this subject is Heydenreich, whose thesis for the degree of Doctor of Medicine in Paris, in 1877, includes a very complete collection of the different forms of fractures of the upper third of the tibia. He groups these under four different classes, viz.:—1. Separation of the superior epiphysis. 2. The tearing away of the anterior tuberosity, commonly in consequence of violent contraction of the extensor tendon. 3. The isolated fracture of one of the condyles.

4. The fracture of the upper extremity of the bone in its entirety. I would add to this classification a fifth, to include the remarkable case long since published by Mr. Adams in the Cyclopædia of Anatomy and Physiology—viz., the tearing away of the spine of the tibia, with the articular surface at its base, by traction on the anterior crucial ligament. The preparation referred to in this case is still preserved in the Richmond Hospital Museum, but both the preparation and the description of it have escaped the author's notice. His fourth group—fractures of the upper extremity of the tibia—includes four varieties; to the second—fractures in which "the articular extremity is smashed into many pieces"—the specimen I present to the Society belongs. The only authority who represents this inquiry in any illustration, beside the author, is Gurlt. Placed beside Heydenreich's plate this specimen is seen to differ from that represented by him only in the features, due to the complete union of the fractures; his is a recent fracture which, as in the majority of these cases, was fatal by gangrene of the limb. In all, he has collected eight cases only of this injury. In this specimen the lines of fracture, viewed in front, make, with the sloping margins of the tibial condyles, a letter W, the central wedge of which enters the joint and is capped as it were by the detached spine—the lateral wedges are depressed, so as clearly to indicate that the force which caused the fractures was a crushing force acting downwards through the femoral condyles. Viewed from behind the fracture is seen as an oblique fissure passing from above the fibular joint downwards and inwards to the base of the inner condyle. The surfaces of the cartilage, except in the lines of fracture, and of the cartilages of femur, are normal; they prove that the subject of this injury recovered without any serious inflammation or damage to the joint. Again, in some of the cases in which this fracture has occurred, it seems to have been determined to some extent by the atrophic condition of the bones, the cases being those of old women and others in which the bones have been brittle and feeble. In the case now before the Society no cause of that kind could have been operative, for the bones are unusually heavy and are evidently those of an extremely powerful male. In some of the recorded cases the injuries were caused by falls from heights, on the feet, and were associated with fractures of the bones of the ankle or foot. Here the ankle-joint and bones of the foot are free from any such damage, although it is clear that the force which produced the injury was transmitted downwards, either by the fall of a great weight on the bent knee or by the mere impact of the body vertically upon the tibia. It would rather seem as if the injury were sustained while the knee was somewhat flexed, in consequence of the extreme displacement backwards of the two fragments. It is not possible to be certain on the point without any exact history; still, I presume, from the escape of the bones of the leg, that in this case, the injury was caused by the fall of

a heavy weight upon a semiflexed knee. I thought it worth while bringing this case forward because no such injury has been recorded by the Society up to the present, nor do we in Dublin possess any specimen similar to it.—*February* 22, 1879.

Pneumothorax from Pleural Fistula after Thoracentesis.—Dr. J. W. Moore said: The thoracic viscera I lay before you were taken from the body of a young man aged nineteen years, who said he had enjoyed good health up to the 1st of the present month. That was a very severe day, a heavy fall of snow taking place, which was followed by sleet and storm. He was exposed to the weather and got thoroughly drenched. When he came home in the evening he sat down before a large fire, and allowed his clothes to dry on him. The same night he was attacked with pains in his bones, which were so severe that he was not able to get up next morning (Sunday). He had repeated shivering fits on this day, followed by profuse clammy perspiration. He lost his appetite, and suffered from the usual symptoms of acute pyrexia. A pain in his right side, along the lower margin of the ribs, set in, and he could not cough in consequence of it. Shortly before the pain, he had been able to cough and had brought up a very thick spit. He had no pain in his head, but felt a giddiness from time to time. He was admitted into the Meath Hospital on the 4th February. At that time his temperature was 103·5°, pulse 120, and his respiration 36. On the 7th of February it was quite evident that he was suffering from acute pleuritis of the right side, and that fluid was very rapidly accumulating. The percussion note was dull over the lower part of the lung posteriorly, and in front—from the clavicle to the fourth rib—the note was remarkably tympanitic. The next day this tympanitic sound gave place to absolute dulness on percussion. Coincidently with this physical sign, which rather transgressed the mesial line, he became cyanotic, and his dyspnœa gradually became extreme. His inspirations were very curious at this time. They were rapid and short, and suddenly checked—a kind of gasping inspiration. As the case seemed a pressing one, he was tapped on the 7th of February, and from thirteen to fourteen ounces of reddish-brown, grumous fluid were drawn off. No aspirator was employed, the only instruments used being a capillary trocar and cannula. He was considerably relieved by the operation; and an attack of diarrhœa seemed to give still further relief to the oppression on his chest. However, although his temperature began to fall gradually, it was evident that the fluid was re-accumulating; and, on the 15th of the month, ninety ounces of true empyematous fluid, the specific gravity of which was 1020, were drawn off by an aspirator. I had been on the look-out for the occurrence of a cough, as an indication either that the withdrawal of the fluid should be more gradual or that the operation should be stopped altogether; but there was no cough, even at the close of the operation,

nor was there any improvement in the character of the breathing, or in the appearance of the patient. He remained with quite as great dyspnœa to the end of the operation, and the cyanosis persisted. On percussing the side from which the fluid was drawn off, immediately after the operation, it was found to be abnormally clear. I felt satisfied that pneumothorax had occurred. The next day this view was still more fully supported by the condition of the patient. His dyspnœa was extreme, and there was a loud puerile respiration, intermixed with bronchial râles, in the left lung. Over the portion of the left lung corresponding to the inferior scapular region there was dulness on percussion and a pneumonic crepitus. His state rapidly disimproved, and he died three days ago, on the nineteenth day of his illness. You see by reference to the chart that the pyrexia had gradually subsided during the last two or three days of his life, and that his temperature had become normal or subfebrile. There had been considerable improvement also in the rate of his pulse and the number of his respirations. About a week before his death a distinct pericardial, to-and-fro, rubbing sound had made itself evident. This was rapidly lost in the loud râles on the left side of the chest.

On a *post mortem* examination the right pleura was found divided by a septum of lymph into two large cavities, both of them full of air, and both partially filled with the same purulent fluid which we had drawn off on the 15th. The right lung was in a state of complete collapse. It was pressed up closely towards the spine, and was everywhere absolutely airless. The upper portion of the lung seemed to be the seat of an anfractuous cavity of very considerable size. Just below the septum of lymph in the pleural cavity a perforation existed, which seemed to be a pleural fistula. I have not found out whence the air escaped into the pleural cavity. The heart presented a good specimen of recent pericarditis. In the left lung were patches of what I think were old-standing consolidations. The area over which the dulness on percussion was felt during life is very well marked by an area in the lung of absolute airlessness and consolidation. The fact that no cough occurred during or towards the close of the operation is interesting, taken in connexion with the evident absence of expansion of the right lung. It is a question what the cause of the cough is during such operations. A case like this would seem to point to the entrance of air into the lung on the affected side as being the cause of the cough in thoracentesis. Another interesting point was that, on the day after the operation, we heard breath-sounds in the right lung, which made me suspicious of the correctness of the diagnosis of pneumothorax. On a more extensive examination, however, it became quite evident that the respiratory sounds we heard in the right lung had really their seat in the left lung, and that it was only their great intensity that led to their being heard on the right side of the chest.—*February* 22, 1879.

Infra-spinous Luxation of Shoulder and Infra-clavicular Luxation of Scapula.—Dr. E. W. Collins said: The specimens I exhibit illustrate the lesions which attend the more complete forms of luxation backwards of the head of the humerus from the scapula, and also of the scapula beneath the clavicle. During last January a floatman, over sixty years of age, sustained a number of very severe injuries, for which he was admitted into Jervis-street Hospital under my care. While in the act of leading his horse, he had been knocked down by the animal, and the wheel of the float having caught him, had dragged him for some distance along the ground. It was found that on the right side his shoulder was dislocated backwards under the scapular spine, while on the left side the acromion process of the scapula was dislocated beneath the clavicle, and a number of his ribs were broken. He had sustained besides numerous wounds and bruises on the lower extremities. The dislocation of the shoulder was reduced without difficulty, as was also that of the scapula on the opposite side. The shock inflicted by these manifold severe injuries proved too great for a system already enfeebled, and he succumbed to typhoid pneumonia within a few days. I had thus an opportunity of carefully examining the condition of the recently dislocated joints.

In connexion with the backward luxation of the shoulder on the right side, I found the capsule torn in all directions—above, below, in front, and behind. The supraspinatus and subscapularis muscles were torn from their points of insertion into the tuberosities of the humerus, while the long tendon of the biceps, without being snapped across, was detached from its connexions with the bicipital groove, and displaced forwards. The teres minor and infraspinatus preserved their humeral attachments, and between them had lain the head of the humerus displaced backwards, resting immediately beneath the scapular spine under cover of the deltoid. I may mention that the detachment of the subscapularis tendon from its insertion into the lesser tuberosity is what usually happens in backward luxations of the shoulder; and in the more complete forms of the accident the tendinous attachment of the supraspinatus is also torn; but in only one other instance (Malgaigne, T. II., p. 537) has the long tendon of the biceps sustained such violence that it has torn the fibrous sheath which retains it in its groove between the tuberosities.

On the left side where, in accordance with recent nomenclature regarding this injury, the acromion process of the scapula was dislocated downwards beneath the clavicle, the ligamentous connexions of the scapula with the clavicle, coraco-clavicular as well as acromio-clavicular, were completely severed. There are two varieties of luxation of the scapula beneath the clavicle. One is a less complete form than the other, as Malgaigne has pointed out. In the less complete form, of which I have met with many examples, the acromio-clavicular ligaments alone, I believe, are torn across, so that the acromion process of the

scapula is but slightly depressed beneath the clavicle. In the case I have detailed there was a far greater degree of displacement; and I can well imagine that it is only under such exceptional circumstances of complete dislocation, you find the lesion of the coraco-clavicular ligaments superadded to the more common lesion solely of the acromio-clavicular ligaments. The unusual degree of violence which occasioned the injuries, doubtless, determined the very complete character of the luxations of the humerus from the scapula on the one side, and of the scapula from the clavicle on the other.—*March* 1, 1879.

Phthisis fatal by Pneumothorax.—Dr. Walter G. Smith said: These specimens were taken from a young man, aged twenty-two, who was admitted into the Adelaide Hospital, under my care, on the 13th of March. He was a tall fairly-nourished young man, and seemingly not at all so ill as he turned out to be. His family history was sound, and his own was good, with the exception that he had suffered from headache, accompanied with sweating, in 1874, when he was under Dr. Finny's care. He seemed to recover from that, remained well until December, 1878, when the sweats returned, and other symptoms of phthisis made their appearance. On Sunday, the 3rd of March, certain symptoms occurred, which indicated the development of the complication from which he afterwards died—viz., pneumothorax. He was dressing to go to church when he was suddenly seized with a severe stitch in the lower part of the left side. This was followed by sudden dyspnœa and sudden cough. Ten days afterwards he was admitted to the hospital suffering from considerable dyspnœa, but otherwise not, seemingly, very ill. The respiration was carried on entirely by the right lung, the left side being in a state of permanent distension, and a cyrtometer tracing showed the great enlargement of the left pleural cavity. The tympanitic percussion note transgressed the middle line by an inch at first, and subsequently by another inch. Vocal fremitus was almost destroyed on the left side, and the impulse of the heart could be faintly felt to the right of the sternum. He had all the characteristic signs of pneumothorax—amphoric breathing at the base, metallic tinkling exquisitely heard in the left axilla, and, by tapping with a coin, the bell-sound could be elicited, and on jogging the body there was a very loud splashing sound brought out. The respirations rarely exceeded 30 in the minute. Notwithstanding that one lung was totally disabled and the other lung considerably embarrassed, yet, except for the dyspnœa, he seemed fairly well. But his appetite gradually declined, and he died on the 1st of April. The *post mortem* was made about ten hours after death. On opening the abdomen the diaphragm was found to be markedly depressed on the left side. On the left side it was a rib and a half lower than on the right side. On opening the thorax, the right pleural cavity

contained a mere trace of fluid. The lung was adherent at the apex, and inferiorly; the upper lobe was consolidated, and the lower lobe studded with patches of caseous pneumonia. On opening into the left chest a puff of gas escaped, even after some gas had been previously drawn off and collected for examination, showing that there was considerable pressure of gas inside the chest. The left side contained about three pints of greenish fluid, with flakes of a white lymph through it. The pleura was vividly injected, much thickened, and flocculent on the inner surface. We now come to the condition of the lung itself. Before making a section of the lung I endeavoured to find the opening by which the pneumothorax had occurred, but careful examination, by inflation under water, failed to detect the perforation. The lung was compressed into a small cake, resembling in appearance the spleen, and lying along the vertebral column. So far as I could determine there was no evidence of true tubercles in or about the lungs, nor was there any evidence of tuberculosis in the abdominal viscera. The case seems to have been an ordinary one of caseous pneumonia, resulting in pneumothorax, arising from a perforation of the pleura, caused by a vomica extending through it. The gas was very little diminished on standing over water, and when shaken up with lime water it produced only slight turbidity. The gas rapidly extinguished a burning match. These simple experiments show that the gas was, as is usually the case, chiefly a mixture of nitrogen and carbon dioxide, with very little oxygen.

The Chairman.—Was the measurement of the chest by the tape at all greater on the left side?

Dr. Smith.—No; measurement by the tape showed no increase.—*April* 5, 1879.

Fracture of the Skull; Rupture of the Pericardium.—Dr. Bennett said: This is a specimen which I bring before the Society in order to record one remarkable feature in the case. It is an instance of the ordinary form of fracture of the base of the skull from a fall, but it was complicated with an injury of the thorax and rupture of the pericardium which I do not think has been, up to this, recorded as occurring from indirect violence. The facts of the case are these:—A young man, twenty-two years of age, a painter, was employed in Lincoln-place painting a pinnacle on the Turkish Baths, at a height of 30 feet from the ground. He fell without any cause being assigned for his fall. There was no fault of the scaffold or ladder. Nothing had given way or shaken him. His fall was seen by one of our own students who was passing out of the gate of the college at the time. He fell clear of all, sheer to the ground on his left ear and shoulder. He fell with a heavy thud, his body falling over the bent neck forward. We have, at all events, exactly the character of the injury and the direction of the force of the fall. He fell on the left

shoulder, his legs and arms doubled over the trunk. He was brought to hospital immediately. He was insensible; his breathing stertorous; blood flowed freely from the ear. His collapse was such that he could not swallow, and as soon as stimulation caused a faint reaction, he became convulsed and died. These facts are all very familiar in connexion with a fractured skull. The fracture starts directly from the squamous bone, above the ear on the left side, and passes forwards and inwards through the middle fossæ to the right orbital plate. Where a man falls from a height upon his head it is much more common to see a fracture of some portion of the skull nearer the vertex than this presents, so that the evidence from the bones is that the left ear must have struck the ground directly. This is quite what one would expect from the description given of the fall. The brain over the seat of the injury, and at the extreme end of the fracture at the opposite side, and over the right temple, was deeply bruised, and the whole surface was deeply coloured by passive congestion. There existed a blood extravasation upon the sternum, and in the middle of the neck at its lower part. The right lung, otherwise healthy, was deeply bruised, and the pericardium on the right side, where the pleura covers it in front of the root of the lung, was torn vertically—the rent being large enough to admit the hand, which passed into the pericardial cavity behind the phrenic nerve. The heart had a considerable superficial bruise at its base, but no rupture. The case presents but little interest except for this feature. The presumption is, with reference to the fall, that he must have fallen with an extreme degree of limpness. It is assumed that the cause of the fall was some epileptic seizure, and he fell like a sack of corn to the ground, without any muscular effort to save himself or to break his fall, no limb being broken, and no effort made to recover himself. The history of the man was this:—He was a journeyman painter, who came from Cornwall, and it was his first day's work in Dublin. His fellow-workmen knew nothing about him, and there was nothing known as to his health save that in his pocket was a letter from his mother, inquiring anxiously after his state of health. He had evidently had some illness, from which he had recovered when he came to Dublin to look for work.—*April* 5, 1879.

TRANSACTIONS OF THE ULSTER MEDICAL SOCIETY.

SESSION 1878–79.

President—A. Harkin, M.D., J.P.
Hon. Secretary—William Whitla, M.D.

Ninth Meeting, March 25, 1879.

A. Harkin, M.D., J.P., President, in the Chair.

Discussion on Dr. Dill's *Paper on "The Use of the Midwifery Forceps."*[a]

At the conclusion of Professor Dill's Paper he exhibited an interesting diagram of the different sizes of the os uteri.

Dr. D. Johnston thought it a question where each should have a fixed principle in his mind about the use of the instrument. He had applied the forceps at every stage. He had no hesitation in saying that in suitable cases the instrument should be applied early, for in the class of cases where the long forceps were indicated seldom does the os fully dilate (the obstruction prevents it), and if we waited for full dilatation we would wait till too late. He laid great stress upon the character of the os as a guide. He had not seen a fistula, and he had delivered 4,000 or 5,000 women, and used the instrument once in every ten cases. He thanked Dr. Dill warmly for his paper.

Dr. Esler commented upon the change in practice in Dublin. He showed the way in which the statistics quoted by Dr. Dill, in reference to Dr. Johnston, might be fallacious. The numbers being too limited, he would side with Dr. Johnston.

Dr. Aiken thought that the character of the os was of great importance. He advocated the "gouging" process, especially in rigid cases; he had practised it scores of times successfully. He found it hasten labour very much. He would not use the long forceps in rigid os, on any account, without a previous dilatation by the fingers. He commented upon the relative merits of Barnes' and Simpson's instruments, and believed that Simpson's had the advantage. He explained a method of wrapping the handle of the instruments with a handkerchief by which he can alter slightly the axis of the blades.

Dr. Moore thought the question narrowed itself into those cases of unobstructed but tedious labours. Twenty-four hours was the limit to

[a] See Dr. Dill's Paper on "The Use of the Midwifery Forceps," in the number of this Journal for June, 1879, p. 486.

healthy labour; if past this there must be an important cause at work. There was no danger whatever in delay in the first stage of labour; he held this to be of very great importance at the start. With unbroken membranes and undilated os, wait, most decidedly. He was sorry Dr. Dill did not bring prominently forward the *character* of the os. He detailed instances where a medical man was imperatively called upon to deliver without waiting for full dilatation. If the os is *rigid*, two things are given us to choose between: either the os will tear, or uterus, child, and all will come with you. With these conditions—a rigid os and unruptured membranes—he would say wait. With these exceptions he would agree with Dr. Dill. He thought the choice of the instrument was more a matter of the attendant's habit. We got great skill with the use of any form after a time. He cautioned the junior members against the habit of tying the handles, which should be allowed to dilate and contract with each pain. He detailed cases where great suffering and damage was caused by the delay in their application.

Dr. Whitla would not express any opinion upon the advisability of using the instrument in cases of undilated os, as his own experience was not sufficient to lead him to a conclusion; but he was sorry Dr. Dill, in his able paper, did not refer to a method which was now sweepingly advocated in England—*i.e.*, the *clandestine* use of the instruments, which he thought was a disgrace to the profession.

Dr. Harkin.—I think that the Society should be very grateful to Dr. Dill for the manner in which he has introduced the all-important subject of the use of the forceps in general, and specially in reference to its place in modern obstetric practice. Just now the minds of medical practitioners are agitated by the advocacy of the use of the forceps in the first stage of labour in strange contrast to the timid teaching of the authorities of forty or fifty years ago, and to the practice approved of by the present race of obstetricians. It is then most fitting that Dr. Dill, both as teacher and practitioner, should give us the result of his matured observation, and bear his testimony on one or other side of the debated question. In my experience there has been a well-marked ebb and flow upon the subject of instrumental assistance in prolonged or difficult labour. In the first decade of my professional career the use of the forceps was much discouraged, and its application surrounded with such guards and exceptions that it required a certain amount of courage even to mention the subject. Denman's dictum was always acted on, and it was considered a necessary preliminary that "the ear of the child should be distinctly felt." The short forceps was then perhaps tentatively applied, while at present that instrument is practically discarded, and the long forceps preferred in every case, and by some authorities applied, as a rule, in tedious cases, even before the os uteri is dilated, and the head still above the brim. The tide is now evidently on the flow, and if we have not

prudence at the helm we may launch our bark into trouble and discomfiture. It is quite true that the late Dr. Thompson, in his time the father of the profession in Belfast, frequently stated that in his lengthened experience he had never once had recourse to the forceps; but Dr. Dill must have forgotten to mention that instead of the double blade he had always used the vectis—and this too was my custom in the earlier years of my professional life when engaged in a case of difficult and prolonged labour. I soon, however, learned the superior advantages of the forceps, and now only have recourse to the lever in breech presentations when the head is detained in the outlet of the pelvis. In this predicament the single blade has many advantages over the double-bladed forceps, not alone from its firmer and more unyielding structure, but from the greater curvature of its broader end. The attempt would be idle, from an array of statistics, to formulate a law for our guidance in the use of the forceps. Some men apply them frequently, others very seldom, and each may triumphantly point to results as satisfactory as the other. Each case must eventually be judged upon its own merits; and while, as I have said, an equal degree of success may be claimed by either class when the safety of the mother alone is accounted for, my opinion is that the advocate of more frequent instrumental aid may justly claim greater success in the saving of infantile life, the great end and object of labour, or, as it is properly styled, childbirth. I would then try to impress upon the younger practitioners in midwifery the desirability of attaining early in life a facility in the use of the forceps, for with this acquirement, accompanied with a proper amount of self-reliance, many a parturient woman may be saved from hours of thriftless labour and pain, and the child not seldom from the dreadful alternative of craniotomy. It is awful to contemplate how often this lethal weapon is preferred even by tyros to the bloodless forceps. In my lengthened experience I have known of too many such; and I may, in passing, refer to a statement made at a branch meeting of the British Medical Association in England, when a member, during a discussion on the merits of the forceps, stated unreservedly that while acting as assistant for a number of years to a doctor in a midland county in Ireland, he had *never once seen* the forceps used in a difficult case, as the perforator was the only instrument chosen to effect delivery. As to the question of applying the long forceps as a rule in the first stage of labour, with the head above the brim and the os undilated, I should hold with Dr. Dill, and only interfere in this heroic manner when an insuperable disproportion had arisen between the expulsion power of the mother and the resistance offered by the maternal structures to a head of large size, or in a malposition. In cases of difficulty and danger of this sort I have, both alone and in consultation, applied the long forceps in the first stage, and with a happy result both to mother and child, after the perforator had been proposed as the only alternative; but I should

always do so with reluctance, and as the safest mode of escape from a painful and dangerous position.

Dr. Dill did not enter into the subject with the view of entering upon all the cases where the forceps were applicable, but mainly with the view of testing this new practice. In reference to the figures quoted by him he maintained the fairness of contrasting the two classes of statistics. He referred to the fact that the head was too often hurried down before the outlet was ready for it, and rupture was sure to follow. No one was more willing to shorten labour than he was, provided the second stage was entered. He would wish them to understand that he excepted the class of case where you would have no dilatation of the os from obstruction high up. He thought the compression should be intermittent. He explained that the sudden dilatation of the os by the head might be brought to a close, and the os might contract round the neck and be a barrier to labour.

Observations on Professor Dill's *Tumour Cases.*[a]

Dr. Aiken said that Professor Dill had spoken of two cases where the tumours had descended. He explained this as owing to the contraction of the os, and he thought that once the tumour got through the os the removal was easy. He explained how the melting away was accomplished. He believed it was atrophy by the force of uterine pressure. He detailed a case under Dr. Johnston where death occurred from hæmorrhage from a fibroid after birth. He detailed a case of his own where the pressure of the uterus caused the absorption of a large mural fibroid.

Dr. Fagan thought if Professor Dill had used other means than the ligature he would have had less trouble—there would have been less danger of hæmorrhage and pyæmia. He would have used the ecraseur. He thought that where hæmorrhage declared itself, and the cause was known, operation should be at once decided upon.

Dr. Esler thought that the ecraseur or thermo-cautery would have been better than ligature. He thought that Dr. Whitla's case of stricture of the gullet was of great interest. He remembered the then child in hospital, and the prognosis was very grave; the most sanguine gave two years as the limit.

Dr. Harkin.—The subject of uterine fibroid tumours which has been presented to us by Dr. Dill must have interest for every one charged with the treatment of the diseases of women. The case seems to have been managed for so far very successfully, and the tumour removed appears a typical one of that troublesome class. In my own experience I have had some remarkable examples, but shall only refer to two—the first and the latest. I find in my notes of the first, that I was called on February 10,

[a] See Dr. Dill's Paper on "Fibrous Tumours," in the number of this Journal for June, 1879, p. 542.

1842, to visit M. D., a domestic servant, aged fifty, mother of three children, but a widow of thirteen years. She informed me that six years before at the cessation of the menstrual period her health became impaired, two years subsequently she began to suffer from a sanguineous discharge from the vagina, at times taking the character of pure blood, the latter was checked by cold applications and a stringent injections ; soon afterwards she was attacked by severe pains in the hypogastric region, from which she slowly recovered. On visiting her at 11 p.m., I found her lying on her back, her legs widely extended, and a large firm globular tumour protruding from the vagina ; the bedding was saturated with blood, pulse feeble, and extremities cold. Great difficulty was experienced in making the necessary examination, the os externum being completely plugged by the tumour. After a consultation with Dr. Burden, it was determined to remove the tumour, but on grasping it firmly previous to passing a ligature round its pedicle, the latter gave way, and the whole body of the tumour separated from its attachment without any further hæmorrhage ; the patient made a good recovery. On cutting into the substance of the tumour, it appeared fibro-cartilaginous in structure, a layer of a circular form and pearly colour—it weighed 1 lb. $9\frac{1}{4}$ oz., measured $11\frac{1}{2}$ inches in smaller, and 15 inches in greater circumference. The tumour was deposited by the late Dr. Burden in the Museum of Queen's College, Belfast, where it may still be seen in a good state of preservation.

The other case was also one of fibroid attached to the os uteri, about the size of a pullet's egg, and occurred in a woman of full habit of body who had not borne any children. I was brought to see her on account of profuse hæmorrhage at the monthly period. On examination the cause was detected and two attempts were made in conjunction with the late Dr. Pirrse to remove it ; we only partially succeeded, the patient refusing to submit to any further surgical treatment. The hæmorrhage continuing profuse, after the failure of other remedies, I had recourse to the hypodermic injection of the liquid extract of ergot, with the satisfactory result that there has not been any return of the hæmorrhage after an interval of more than two years, and the patient's health seems quite established.

Dr. Dill (in replying to Dr. Aiken's statements about the natural cure from pressure of the uterus) said this cure was not by atrophy but by enucleation and consequent starvation ; they were very poorly nourished. It was not the pure fibrous tumours which melted away, but the fibro-cystic, and he explained the supposed process. As regarded the preference to the ecraseur, he never fell out with old friends. His reason for using the ligature was the very large size of the base of the tumour. He did not believe with Dr. Fagan that the use of the ecraseur left no foreign body behind it ; the bruised part, or stump, left by it was the worst form of foreign body possible to conceive. He quoted the authority of Simpson and others in support of this.

Stricture of the Œsophagus.

Dr. Whitla exhibited a patient labouring under stricture of the œsophagus, and gave the history of the case. The patient was nineteen years old. Five years previously she was admitted under his care into the Royal Hospital in a state of great collapse after swallowing a quantity of strong sulphuric acid. She was then about fourteen years old. The usual remedies were employed. He said that it was needless to remark that the stomach pump was not used. She made an excellent recovery, and left hospital in about three weeks. After six months she was again admitted, suffering from symptoms of obstruction of the gullet. Bougies were employed, and she left considerably relieved. He lost sight of her till about a year ago, when she presented herself in a state of great emaciation, and seemed totally unable to swallow anything, even milk was regurgitated, and there was bleeding from the seat of stricture. A No. 2 catheter refused to pass into the stomach. The stricture was close to the opening through the diaphragm. The catheter caused considerable pain and bleeding. He was at a loss for an instrument sufficiently soft to use without giving pain, and yet firm enough to make way, and he found that sea-tangle, fresh and undried, answered his purpose best; and, after some time, he was able to dilate the stricture, and keep it open whilst healing of the ulceration went on, and now he was able, as the members of the Society would see, to pass the large bougie which he held in his hand, and which was as thick as the middle finger. The patient now was able to swallow anything without pain. He brought the case forward simply to have it placed upon record. Such cases were rare, and he did not remember a recorded case where so long a period as five years had elapsed with a patient living with a narrow stricture from strong corrosive poison.

A Series of Pathological Specimens.

Dr. Anderson showed—1. A beautiful specimen of talipes equinus, and demonstrated the altered directions of the articular surfaces of the bones, and the effects following these. New articular facets were to be seen. He considered the case one of the acquired variety.

He also showed—2. A very interesting specimen of advanced rheumatoid arthritis of the hip-joint.

3. A case of exostosis of the great trochanter.

4. Rheumatic arthritis of the elbow-joint, showing the porcellaneous formation.

5. A deformed scapula, from mollities ossium.

6. An apparent fracture of the acromium, which has been described as a separation of the epiphyses, the surfaces being rough and irregular. He spoke of its relation to rheumatic arthritis, and thought this explained

the non-union. He supported this view by a study of the centres of ossification. Many of these cases were turning up in the rooms yearly.

7. Ditto. Dried specimen.

8. The bones and ligaments in an old-standing dislocation of the head of femur, associated with atrophy of the muscles, and great thinness of the bones, though the subject from which the specimen was taken was one of very active habits, and lived by spinning.

9. A beautiful specimen from the same subject, the thinned-out calvarium, where the bone was as thin as writing paper.

10. An impacted fracture of the articular surface of the tibia.

11. The calvarium, from a man who died from the effects of the inner table of the skull being broken. The specimen showed the great value which would have resulted from the use of the trephine.

Dr. Fagan thought that he would have had more inversion of the foot in the case of talipes equinus. He explained how the tibialis would have tended to draw in the foot, but, strange to say, there was no inversion.

As regards the ununited epiphyses, he thought that these should not be mistaken for fracture. He referred to the opposite shoulder. It generally occurred double. As regarded the fracture of the tibia, he thought the specimen very interesting.

Dr. Brown had two cases of acquired talipes equinus from injury to the leg muscles, ending in diffuse cellulitis. He would have thought that there would have been inversion. He quoted from Dr. Hudson, who trephined all head fractures, and referred to Professor Goslin's authority.

Professor Dill commented upon the specimen of diseased pelvis, and explained how the disease upon the outside of the pelvis so affected the sacro-iliac joints as to cause difficulty in labour without interfering with the measurements of the pelvis.

Diseased Os Calcis.

Dr. Walton Browne exhibited two specimens of diseased os calcis, which he had removed in their entirety by excision. Both specimens had been removed from scrofulous subjects, and had taken on carious action, the exciting cause being an injury. He pointed out the various methods of excision of the bone as practised by Erichsen, Grau, Holmes, Buchanan, Hancock, and Greenshaw, and stated that he preferred Holmes' operation—Holmes' Surgery, Vol. III., p. 828. Dr. Browne also mentioned Buchanan's idea, that when caries attacks the os calcis, it does not, as a rule, extend to the other bones of the tarsus, so that we are somewhat justified in recommending excision of the bones. He said

that he did not approve of the gouging of a diseased os calcis; he had done so five or six times, the results being very unsatisfactory. He did not approve of Allier's subperiosteal excision, but advocated strongly Holmes' method, removing the entire bone, and its periosteum. One of his cases had terminated fatally five months after the operation, the cause of death being phthisis; in the other case, the boy had a fairly useful foot, being able to walk with the aid of a stick. Dr. Browne also mentioned that Mr. Tyrrell, of Dublin, had been the first surgeon in Ireland to excise the entire os calcis. He hoped to publish the case in full shortly.

Dr. Browne also exhibited an extra-capsular fracture of the femur; also a femur which had become eroded upon its posterior and internal surfaces by the pressure of a popliteal aneurism.

Dr. Harkin thought that the specimens of os calcis were well worthy of recording, but he hardly thought that there was sufficient evidence before the profession to thoroughly establish the operation.

Dr. Wales thought that a cast of the foot taken after the operation of excision of the os calcis would be a very interesting study.

Dr. Anderson asked how long the aneurism had pressed upon the bone.

Dr. Workman saw in the Glasgow Infirmary two cases of excision of the os calcis, done by Dr. Buchanan. He believed it was a justifiable operation in suitable cases.

Dr. Moore said the old man who supplied the fracture of the humerus had received the injury upon 24th December last. It showed the effect of an injury to bone in a man so old—eighty-four years. As regarded the excisions about the ankle-joint, he thought too much importance could not be attached to the use of Esmarch's bandage. He detailed the objections to its use, which, he believed, were owing to imperfections in our application. He thought that the fracture of the femur was a complicated one, and that the neck was partly absorbed. He did not think that a fall against the wall would produce this break. It was a question whether the fall in some cases was not the result of the fracture. As regards the popliteal aneurism, he would remark that this form was rare here. He detailed a case where manual compression was used with a success which at first surprised him, but the patient sank from gangrene. He did not believe that the electrolytic method was of any use.

Dr. Esler thought that a lesson might be taken from these dry bones—fractures in old people ending often so fatally, while in the young they seemed to have so little to say to life's duration.

The President, in thanking Dr. Browne for his interesting specimens, asked about the previous history of some of the patients.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, M.D., F.K.Q.C.P.

Vital Statistics

Of Eight Large Towns in Ireland, for Four Weeks ending Saturday, July 12, 1879.

Towns	Population in 1871	Births Registered	Deaths Registered	Deaths from Zymotic Diseases							Annual Rate of Mortality per 1,000 Inhabitants
				Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhœa	
Dublin, -	314,666	863	796	31	16	23	—	6	24	11	32·9
Belfast, -	182,082	565	331	—	2	—	—	15	7	13	23·8
Cork, -	91,965	191	183	—	—	4	—	1	6	4	25·8
Limerick, -	44,209	97	101	—	—	—	—	2	3	3	29·8
Derry, -	30,884	79	49	—	—	—	2	—	1	2	20·8
Waterford, -	30,626	57	47	—	—	—	—	—	—	—	20·0
Galway, -	19,692	26	37	—	—	—	—	—	1	2	24·3
Sligo, -	17,285	32	21	—	—	—	—	2	1	1	15·8

Remarks.

A very high death-rate prevailed in Dublin and Limerick; a high rate for the time of year in Cork, Galway, and Belfast; and a moderate or low rate in Derry, Waterford, and Sligo. Irregular registration again affected the mortality returns for Dublin. Of the 796 deaths registered in the four weeks, 195, or 24·5 per cent., occurred prior to June 1, and were discovered by means of the Burial Lists furnished under the provisions of section 191 of the "Public Health (Ireland) Act, 1878." The death-rate was 17·9 per 1,000 of the population annually in London, 19·3 in Edinburgh, and 19·9 in Glasgow. Omitting the deaths of persons admitted into public institutions from localities outside the registration district, the rate of mortality was 31·8 per 1,000 in the Dublin district, and 35·3 per 1,000 within the municipal boundary of this city. Zymotic affections caused 133 deaths in Dublin, against a ten-years' average of 114·0 deaths in the corresponding period. Smallpox and diarrhœa showed a lessened fatality, whereas the other diseases were about as fatal as in the previous four weeks. Of the 24 deaths caused by fever, 5 were attributed to typhus, 18 to typhoid, and 1 to

continued fever of undetermined type. At the close of the period 73 smallpox patients remained under treatment in the Dublin hospitals, compared with 110, 102, 101, 135, 177, 188, 122, 86, and 47 at the close of the nine preceding periods respectively. Whooping-cough and diarrhœa were again fatal in Belfast. Not a single death from a zymotic disease was registered in Waterford. Delayed registration and the exceptionally cold wet season render the registered mortality from affections of the organs of respiration very high in Dublin. The deaths from this class of diseases were 152, compared with a ten-years' average of 73·9. They included 116 from bronchitis (average = 52·2), and 24 from pneumonia (average = 11·1).

Meteorology.

Abstract of Observations made at Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W. for the Month of June*, 1879.

Mean Height of Barometer,	29·710 inches.
Maximal Height of Barometer (on 13th at 9 a.m.),	30·138 ,,
Minimal Height of Barometer (on 21st at 3 p.m.),	29·328 ,,
Mean Dry-bulb Temperature,	55·4°
Mean Wet-bulb Temperature,	52·4°
Mean Dew-point Temperature,	49·6°
Mean Elastic Force (Tension) of Aqueous Vapour,	·355 inch.
Mean Humidity,	80·5 per cent.
Highest Temperature in Shade (on 27th),	69·4°
Lowest Temperature in Shade (on 2nd),	40·9°
Lowest Temperature on Grass (Radiation) (on 3rd),	35·3°
Mean Amount of Cloud,	73·0 per cent.
Rainfall (on 24 days),	4·046 inches.
General Direction of Wind,	S.E. and S.W.

Remarks.

Very unsettled, showery weather continued throughout the month, of which the mean temperature was 1·9° below the average of June in the previous thirteen years. During the first fortnight cloudy skies, frequent showers, and variable light winds attended a series of shallow barometrical depressions, which moved slowly across the British Islands, generally from S.W. to N.E. These depressions were accompanied by storms of thunder and hail in many places, both in Great Britain and in Ireland. After the 18th the barometer remained relatively high over France, while a succession of rather deep depressions travelled in a northerly or north-easterly direction along the west coasts of Ireland and Scotland. Gradients for S.W. winds consequently became steep over the United Kingdom, and the wind frequently blew in strong squalls from S., S.W., or W., accompanied by exceedingly heavy showers. At

intervals there was warm sunshine; but the squally wind, frequent rain, and damp atmosphere reminded one more of October than of June. In Dublin thunder was heard on the 3rd, 25th, and 29th. Hail fell heavily at 5 and 6 p.m. of the 3rd. The atmosphere was foggy on the 7th and 14th. A solar halo was observed at 7 30 p.m of the 11th. The rainfall (4·046 inches) was far above the average of the previous fourteen years (1·771 inches), and the number of rainy days (24) was nearly double the average (12·6) of the same fourteen years. June has generally the fewest number of rainy days of any month in the year—a fact which makes the wetness of the present season the more remarkable. On the afternoon of the 30th a very deep depression advanced over Ireland from S.W., and the month closed amid a tempest of wind and of rain.

PERISCOPE.

Edited by G. F. Duffey, M.D., F.K.Q.C.P.

DEFIBRINATED BLOOD FOR RECTAL ALIMENTATION.

At a meeting of the Therapeutical Society of New York, held February 14, 1879, the Committee on Restoratives, through its chairman, Dr. Andrew H. Smith, presented a valuable report on the use of defibrinated blood for rectal alimentation. The report covers sixty-three cases. Of these, thirty-eight cases were of pulmonary phthisis in every stage, some of them presenting large cavities, and several being within a few days of the fatal termination. Eight of these could not tolerate the injections, either because of irritability of the rectum or on account of severe and persistent abdominal colic even when the dose was reduced to two ounces and tr. opii added. This leaves thirty cases in which the treatment had a more or less thorough trial. Of these, ten showed no effect which could fairly be attributed to the injections. Some were improving before the treatment was begun, and continued improving at about the same rate during its continuance. Others were losing ground, and their downward tendency seemed not to be checked in any appreciable degree. These cases have, therefore, been regarded as not affected either way by the treatment. We have, therefore, twenty cases left in which positive benefit seems to have attended the use of the blood. This benefit was expressed sometimes by a decided gain in weight, in other cases by improved appetite and increased vigour, in others by cessation of night-sweats or by diminished cough. From the facts before them, the committee feel warranted in the following conclusions:—1. That defibrinated blood is admirably adapted for use for rectal alimentation. 2. That in doses of two to six ounces it is usually retained without any inconvenience, and is

frequently so completely absorbed that very little trace of it can be discovered in the dejections. 3. That, administered in this way once or twice a day, it produces in about one-third of the cases for the first few days more or less constipation of the bowels. 4. That in a small proportion of cases the constipation persists, and even becomes more decided the longer the enemata are continued. 5. That in a very small percentage of cases irritability of the bowels attends its protracted use. 6. That it is a valuable aid to the stomach whenever the latter is inadequate to a complete nutrition of the system. 7. That its use is indicated in all cases not involving the large intestine, and requiring a tonic influence which cannot readily be obtained by remedies employed in the usual way. 8. That in favourable cases it is capable of giving an impulse to nutrition which is rarely if ever obtained from the employment of other remedies. 9. That its use is wholly unattended by danger.—*New York Med. Journal*, April, 1879.

A URINE-THERMOMETER FOR GYNÆCOLOGICAL PRACTICE.

Dr. Otto Küstner, of Jena, describes an ingeniously arranged instrument for measuring the temperature of the urine in gynæcological practice. The instrument consists of a silver female catheter, which contains in its lumen a self-registering thermometer. The catheter tapers sharply below the point to which the bulb of the thermometer reaches, and in addition to the usual eye at its vesical end, possesses another near the external end for the escape of the urine. The thermometer is firmly soldered to a silver top, which fits closely into the outer end of the catheter; this top, with the thermometer attached, can be removed at will. The space left between the thermometer and the wall of the catheter is about equal in area to the lumen of the tapering end of the catheter, so that the urine can pass out freely, bathing the thermometer in its course, and escaping in a stream from the external eye of the catheter. When the instrument is introduced into a moderately filled bladder, the column of mercury in the thermometer attains its maximum point in from eight to fifteen seconds according to the rapidity with which the urine escapes, the rapidity of the flow of urine in turn depending on the usual causes—viz., the degree of distension, the action of the abdominal muscles, the age of the patient, &c. The average quantity of urine that escapes through the instrument in fifteen seconds is about sixty c. cm. (about two ounces), although this, of course, is subject to many differences. The temperature of the body measured in the urine in fifteen seconds and less with this instrument corresponds very closely with the temperature obtained with the same thermometer when left in the vagina for five minutes, the difference, when any exists, being at most 0·3–0·15 of a degree (C.) This fact was verified by a large number of experiments. Hence Dr. Küstner claims that his instrument, against

the use of which in gynæcological practice no objection can be raised, presents the most certain and rapid method of measuring the temperature of the body. The advantages claimed for the new instrument in measuring the temperature of the urine in women are:—the rapidity with which the measurement is taken, the small quantity of urine required for it (even if the patient urinated half an hour before there will be enough urine in the bladder for the purpose), the practically absolute uniformity of the results with those obtained in the vagina, and the convenience of application.—*Centralblatt f. Gynäkologie*, Feb. 15, and *N. Y. Med. Record.*

INTRAVASCULAR INJECTIONS OF MILK.

M. Laborde has made a communication to the Société de Biologie, referring to M. Brown-Séquard's experiments on the injection of milk. M. Brown-Séquard injected the milk cold, and so very slowly that there was no lowering of the temperature or shivering. He exhibited a dog in excellent health, into which he had five months before injected 92 grammes of milk, in place of 95 grammes of blood. When milk is injected into the blood of a dog the milk globules disappear with great rapidity; but the white blood corpuscles show themselves in an increased proportion. A series of experiments led M. Brown-Séquard to believe that, within certain limits, milk can be with impunity injected in the place of an equal amount of blood withdrawn—but he could not determine what the limits are. M. Laborde has experimented with tepid milk, which he believes the safest. He found that when 80 centilitres of pure milk were injected at once into a dog weighing 11 or 12 kilogrammes, it rapidly succumbed; when, on the contrary, the same quantity was given in repeated injections of 25 to 30 grammes each, they were borne without inconvenience. Almost immediately after the injection the milk globules were found in the general circulation, from which they very gradually disappear. They concentrate themselves in important organs, such as the brain, lungs, liver. In the case of dogs dying from twenty to forty hours after injection, M. Laborde has found alterations in the lungs, stomach, and nervous centres. Ecchymoses were scattered over the surface of the lungs, and when these were cut into, a large quantity of white globules presented themselves. Small hæmorrhages were also discoverable in the mucous membrane of the stomach, and ruptures of the capillaries in the cerebrum, cerebellum, and the medulla oblongata. He tried the injection of a cubic centimetre of milk in the lymphatic heart of frogs with the invariable result of killing them. On the first day some vessels were obliterated; on the second the milk globules had completely replaced the blood in the mesentery. From his experiments M. Laborde does not feel himself justified in deducing any very precise results; but he believes that into the human circulation not more than

200 grammes of milk should be injected in one sitting. Even this amount in the case of a dog weighing 16 kilogrammes will kill, unless injected in small doses, at intervals of several hours.—*Revue Médicale.*

S. W.

INHALATIONS IN THE TREATMENT OF PULMONARY DISEASES.

Dr. Devis, of Chicago, says that in that form and stage of chronic bronchitis characterised by an excessive purulent or mucopurulent expectoration, an inhalation of steam impregnated with the vapour of carbolic acid and camphorated tincture of opium will be found to afford prompt relief to all the immediate symptoms, the carbolic acid acting as an antiseptic, while the moist warmth and the opiates allay local irritation and the resulting cough. The formula which he is in the habit of using is as follows:—℞. Acid. carbolic. cryst., gr. 30; tr. camphoræ co., ʒ iij. M. Sig.: One teaspoonful in half a pint of hot water, to inhale as directed. Another stage of chronic bronchitis is distinguished by a harsh, hard, irritative cough, and little or no expectoration. Such portions of the respiratory mucous membrane as can be brought within view present a pale, anæmic, and dry shrivelled appearance. Here we require, locally, a combination calculated to stimulate free capillary circulation and secretion, and also to exert the soothing anodyne influence necessary to control cough. For this purpose Dr. Devis has found the following combination to answer exceedingly well:—℞. Oil of Scotch pine, ʒ j.; Camph. tinct. of opium, ʒ iij. M. Sig.: One teaspoonful in half a pint of hot water, to inhale as before. For the oil of Scotch pine almost any of the oleo-resin balsamic preparations may be substituted.—*Detroit Lancet* and *N. Y. Med. Record.*

NEUROTOMY OF THE SUPERIOR MAXILLARY NERVE FOR NEURALGIA.

The *New York Medical Journal* for June contains an important article by Dr. Dennis on this subject. The superior maxillary branch of the trigeminus, which is contained within a bony canal, rendering disturbances of its nutrition by pressure of the slightest degree possible, and which is also connected by Meckel's ganglion with other nerves of the face, has always been a favourite seat of neuralgia, and has afforded for nearly two centuries opportunities for the display of bold, conservative, successful surgery. No nerve offers more satisfactory and gratifying results than the superior branch of the trifacial nerve when neurectomy is performed upon it, provided only the proximal section of the nerve be made between Meckel's ganglion and the foramen rotundum, so as to include all the direct fibres of the main trunk, while excluding all the recurrent fibres which are derived from the ganglion through its branches of distribution to the superior maxillary nerve. A full abstract of the twenty-one cases recorded in which this operation was performed is

given, and its value—as affording relief to the sufferer, and the dangers involved by the patient—shown by a tabular statement. In sixteen of the twenty-one cases permanent relief was obtained by the operation, and in no case was death due to its performance. It may therefore be said that resection of the superior maxillary nerve, together with Meckel's ganglion, for the alleviation, and in most cases the cure, of one of the most dreadful and formidable diseases to which human flesh is heir, is one of the greatest triumphs of surgery. It is also a most significant fact that out of the twenty-one cases that have been collected from all the literature upon this subject, more than half have been performed by American surgeons. It is certainly an operation of which American surgery can justly be proud; and if the success which has attended these twenty-one cases will only induce surgeons to investigate impartially the merits of this operation, it will inaugurate a new era and establish a reform in the surgical treatment of this most desperate malady.

ENEMATA OF CHLORAL IN SICK HEADACHE.

Dr. J. Seure recommends this treatment very highly. He says that a patient of his, a lady who is subject to severe attacks of megrim after shopping, &c., is accustomed, on her return home, to take an enema consisting of a glass of warm water, containing twenty grains of chloral. She then reclines upon a sofa, with closed eyes. Within a few seconds she begins to taste the chloral in her mouth, and at the same time she experiences a sensation of numbness. Little by little the headache disappears, nausea is allayed, and a half hour later nothing remains but a slight discomfort in the head, with a little torpor. In this case twenty grains of chloral are enough, but in the case of men thirty or forty grains are required. Dr. Seure has noticed that the relief gained is more prompt if a tablespoonful of brandy or whiskey is added to the enema. The enema has one disadvantage—that is, the slight burning pain it causes in the rectum. This may be avoided by the use of a glass of warm milk instead of warm water, or better by beating up the yolk of an egg in the water. In the case of individuals who retain the enemata with difficulty a smaller amount may be injected, and a drop or two of laudanum may be added. Dr. Seure regards this treatment as almost infallible for the arrest of sick headache, and as decidedly preferable to the administration of remedies by the mouth. It has the advantage of not disturbing the stomach. Chloral acts also very promptly, its absorption by the rectum being almost instantaneous, as is proved by the effects on the general system, and also by the exhalation of chloroform by the lungs within a few seconds after the enema has been taken.—*Bull. Gén. de Thérap.*

S. W.

THE PATHOLOGY OF PULMONARY ŒDEMA.

A VERY suggestive paper appears in *Virchow's Archiv* (Vol. LXXII., p. 375) by Welch, a pupil of Cohnheim, on this subject. The author first points out the unsatisfactory nature of the causes usually assigned for œdema of the lungs. It is usually assumed that a passive or active congestion is enough to produce it, but in a series of experiments it was proved that it takes an enormous increase in the blood pressure to produce œdema. He tried by obstructing the aortic system to produce it, but was only successful when he had ligatured all the branches except one of the carotids, or one subclavian. Again, in order to produce œdema by obstructing the pulmonary veins, it is necessary to close them almost completely. Hence it appears to be necessary to increase the blood pressure enormously, and no obstruction of the circulation in the human subject is likely by itself to be sufficient to cause œdema. It occurred to the author that if the left ventricle of the heart were weakened, while the right remained acting strongly, there would here be a condition capable of producing a great excess of pressure in the pulmonary circulation. He endeavoured to test this in animals, but it was long before he succeeded in weakening the left ventricle without the right. At last, by squeezing the left ventricle in rabbits between the finger and thumb, he produced the desired effect, and he found that pulmonary œdema was regularly produced. If this be the cause of pulmonary œdema in the human subject, it will explain many apparent anomalies, such as its sudden occurrence, its appearance in one case, while remaining absent in another case apparently similar; its absence in cases where there is the greatest obstruction to the pulmonary circulation.—*Glasgow Medical Journal*, Feb., 1879, and *The Practitioner*, April, 1879.

ULCERATION OF THE NECK OF THE UTERUS CURED BY GRAFTING.

DR. R. W. AMIDON reports (*Archives of Medicine*, April, 1879, and *N. Y. Med. Rec.*) the case of a patient—a prostitute who had been previously treated for pelvic peritonitis. Examination with the speculum showed that the neck of the uterus was very much enlarged and hard, and around the os was a circular ulcer seven-eighths of an inch in diameter, and longer in the vertical direction; its surface was studded with bright red, healthy granulations. The ulceration was treated in a variety of ways for one and a half months without producing the slightest benefit. Grafting of mucous membrane was then resorted to in the following manner:—A small fold of mucous membrane was stripped off from the side of the vaginal wall, and was cut in two. The granulations on the ulcer having been scratched below and to the left of the os, the pieces were embedded in the granulations by means of an instrument

used for tying deep sutures. Another piece of membrane was cut off and embedded in the granulations above the os. The speculum was left in position, and the patient kept on her back for an hour, at the end of which time a large tampon of cotton, moistened with pure glycerine, was placed against the ulcer, and the speculum was withdrawn. Strict quiet in bed was enjoined, and the tampon was removed the next morning. Five days afterwards a pellicle of newly-formed mucous membrane was found to have formed from the three grafts. The remainder of the ulcer retained its red granular appearance. Three days later the ulcer was all covered with new mucous membrane, except a narrow rim just above the external os. A fresh piece of vaginal mucous membrane was now placed in each external angle of the os and treated in the same manner as previously. When examined a month later the site of the ulcer was entirely covered by new mucous membrane.

CONTRIBUTION TO THE KNOWLEDGE OF PERNICIOUS PROGRESSIVE ANÆMIA.

C. M. Sörensen, Copenhagen (*Allg. med. Centr. Ztg.*, No. 54), from observations of eleven cases of progressive excessive oligocythæmia, concludes that the etiology of this always fatal disease is still unknown, and mode of origin generally spontaneous. The blood was first examined and found to be pale and transparent. A mixture of blood from such patients with artificial serum was always so pale that from this alone the disease could be diagnosticated. The number of blood-corpuscles, counted according to Malassez's method, was only one-fourth to one-twelfth of the normal number. As soon as the number had become reduced to about half a million, death ensued; it must, therefore, be assumed that this quantity is necessary for the preservation of life. The red corpuscles were also abnormal as regards size, form, and colour. The serum had an alkaline reaction, and did not dissolve the red corpuscles of a healthy subject. The disease developed in a latent manner; in no case could its commencement be determined. The symptoms consisted in gastric derangements, anæmic symptoms, pale-yellowish but icteric colour of the skin, a certain *embonpoint* in spite of great debility, bellows murmur over the heart and neck vessels, constant hæmorrhages on the retina, irregular febrile attacks without ascertainable cause. Death was sure to ensue after a longer or shorter course. Of the eleven cases nine were examined *post mortem*, and the following condition was found:—Thinness of the blood; granular degeneration of the glandular tissue of the liver, kidneys, and suprarenal capsules, and of the heart; the internal coat of the aorta had undergone fatty degeneration; capillary hæmorrhages were found in the tissues, arising from degeneration of the capillary wall. Aside from lesions ascribable to faulty nutrition and mal-assimilation, no other pathological changes of etiological value were noticed. The above eleven

cases were observed in the course of a year and a half in the hospital. Seven of them were men, four women. In the latter no connexion with pregnancy or parturition could be found, as was stated to be in Gusserow's case. Nor could the cause in any case be ascribable to unhealthy occupations, privations, as Biermer believes, nor to hereditary disposition. One patient only stated that the exertions during vigils with a sick sister and grief over her decease were the probable cause. The author conjectures the origin of the disease to be in a faulty formation of the red corpuscles, and opposes the hypothesis that their mere transformation is the cause; for in this disease the nutrition of the tissues is rather increased than diminished. For the purpose of exact diagnosis the author emphasises the counting of the red corpuscles, and by differential diagnosis between it and other oligocythæmic conditions, in severe cases of chlorosis. In one case transfusion, but without success, was tried, nor did other methods of treatment avail. The prognosis is, therefore, most unfavourable.—*N. Y. Med. Journal*, May.

HEPATIC PULSATION WITHOUT TRICUSPID INSUFFICIENCY.

After calling attention to the hitherto accepted diagnostic importance of a systolic hepatic pulsation as pathognomonic of the existence of an insufficiency of the tricuspid valve, Rosenbach (*Deutsche medicin. Woch.*) states that cases occur in which such a pulsation, not to be distinguished from that produced by tricuspid insufficiency, may exist in the absence of this lesion. There are, consequently, two forms of hepatic pulsation to be recognised, only one of which is associated with tricuspid insufficiency. After reporting a case of the second exceptional variety, he gives the following explanation of its occurrence:—The condition of apparent special importance was an aortic insufficiency, in which affection of the heart, above all others, the difference between the initial and terminal arterial tension is the greatest, and the smallest arteries, even the capillaries, pulsate. It is therefore quite possible in such cases for a hepatic pulsation to occur. That such does not ordinarily take place is probably due to the absence of favouring conditions, which were present in the case reported. These were considered to be a decided enlargement of the liver, with a powerful action of the left ventricle and a narrow aorta. The impulse resulting from the powerful initial tension thus became readily transmitted to the enlarged and elastic liver easily accessible to the touch. In uncomplicated aortic insufficiency an enlargement of the liver from passive venous congestion only takes place when the left ventricle is incompetent, or the arterial elasticity is diminished; consequently the conditions on the part of the heart and arteries which favour an arterial hepatic pulsation are usually lacking when the liver is thus enlarged. The cause of the favouring combination in the reported case was attributed to the presence of an obliterated pericardium and a pleuritic exudation,

which produced a passive venous congestion at a time when the left ventricle was still competent to overcome the aortic lesion.—*Boston Med. and Sur. Jour.*

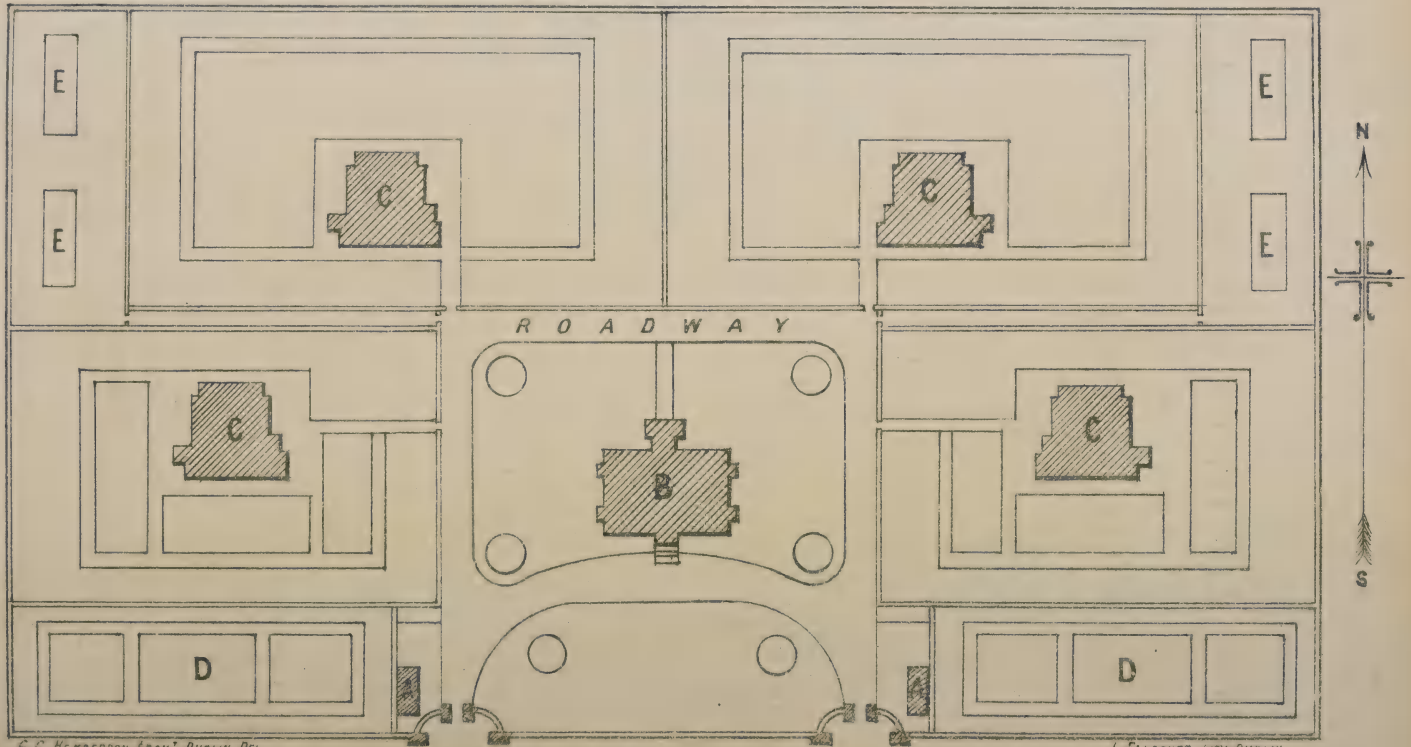
PSORIASIS TREATED BY SUBCUTANEOUS INJECTIONS OF ARSENIC ACID.

A. TICHOMIROW (*Moskowskaja Medizinskaja Gazeta*, No. 39) treated a case of diffuse psoriasis vulgaris in a boy ten years of age by subcutaneous injections of arsenic acid. The case presented the usual symptoms of this disease in its chronic state. Although widely disseminated over the entire body, the eruption was most marked upon the extensor surfaces of the knees and elbows. It had already lasted over a year, and all syphilitic taint could be readily excluded. At the beginning the treatment consisted simply of daily subcutaneous injections of $\frac{1}{56}$ grain of arsenic acid in solution; this amount was gradually increased (every three or four days until $\frac{1}{14}$ grain was administered daily. As early as the sixth day of this treatment the scales began to disappear from the back and chest and did not reappear. When about one grain had been given, the infiltration of the face and neck had so far passed off that after inunctions of oil and washing with warm water the surface was perfectly freed. The thighs and nates were the last portions of the body to be freed of the eruption, in consequence probably of frequent irritation by urine, the boy having been troubled for some years with nocturnal incontinence. The treatment lasted altogether five months, during which time $4\frac{1}{2}$ grains of arsenic acid was injected. The writer claims that this is the third case in the literature of the treatment of psoriasis by this method. The first two were reported by Dr. Lipp, in one of which 48 and in the other 38 days sufficed to effect a cure without the employment of any external remedies whatever. In the former 8·8 grains, in the latter 4·5 grains were administered. Tichomirow says that even should it turn out that the subcutaneous injections fail to cure the cases more rapidly than its internal administration, they will still deserve the preference on account of the avoidance of digestive derangement secured by their use.—*St. Petersburger med. Wochenschrift*, and *Cincinnati Lancet and Clinic.*

S. W.

Plate. I

THE BLOCK PLAN OF CONVALESCENT HOME.



THE DUBLIN JOURNAL

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SEPTEMBER 1, 1879.

PART I.

ORIGINAL COMMUNICATIONS.

ART. VI.—*How are we to deal, by Isolation or otherwise, with Convalescents from Acute Infective Diseases, so as to Prevent the Spread of Disease?*[a] By JOHN WILLIAM MOORE, M.D., M.Ch., Dubl.; F.K.Q.C.P.; Physician to the Meath Hospital and to Cork-street (Fever) Hospital; Diplomate in State Medicine of Trinity College, Dublin, &c.

THE question which has been proposed for discussion on the present occasion—that of the management of the Convalescent so as to limit or prevent the spread of epidemic disease—is eminently suggestive and one which comes home to every thoughtful practical physician.

So important is the inquiry in which we are engaged that I would shrink from the responsibility of opening this discussion, did I not feel that the compliment paid me in asking me to do so was a recognition of my official connexion with the largest epidemic hospital in Ireland—Cork-street Fever Hospital and House of Recovery, Dublin—rather than of any special personal qualification for the duty imposed upon me.

It is probable that subsequent speakers may suggest other methods of dealing with the Convalescent from Acute Infective Diseases; but, as the result of mature consideration, I have come to the conclusion that the only feasible method of attempting to limit

[a] Read before the Public Medicine Section of the British Medical Association at the Forty-seventh Annual Meeting held at Cork, August, 1879.

the spread of epidemic disease is by a system of complete *isolation* of the sick and convalescent—using the word "isolation" in the most extended sense. The convalescent from an infectious disease must be kept separate until the days of his purification are accomplished—in the words of the Mosaic law, "He shall dwell alone; without the camp shall his habitation be" (Leviticus, xiii. 46). Nor will it suffice to isolate the convalescent himself—his wearing apparel and other possible *fomites* must also be prevented from doing harm by thorough disinfection. Sometimes, indeed, nothing short of destruction by fire can neutralise the danger.

In hospital practice I have had frequent opportunities of recognising the want which exists of suitable accommodation for infectious convalescents. Although we are just now primarily concerned with the protection of the healthy from the risk of infection, I may be permitted to advance four reasons why in the interest of the convalescent themselves we should provide for them a temporary home *outside the hospital precincts*:—

1. The health of convalescents is often seriously injured if they are kept in hospital beyond a certain period in their progress towards recovery. In the twelve months ending March 31, 1879, upwards of 1,500 smallpox patients passed under my observation in the Epidemic Wards of Cork-street Fever Hospital. Often and often was I an eye-witness of the untoward effects of a prolonged sojourn in the necessarily tainted air of the hospital. Abscesses, bed-sores, diarrhœa, pleurisy, pneumonia, scarlatina, were sequels of the disease in too many instances, and I could not help thinking how different it might have been had the sufferers been removed in good time to a purer air.

2. The surroundings in even the best managed epidemic hospital cannot fail to exercise a depressing influence on the minds of patients who are recovering from illness.

3. It should not be forgotten that beds are being occupied by the convalescent which may probably be urgently required at that very moment for other patients in the earlier stages of their sickness.

4. Lastly, it is most desirable that those who toil for their daily bread should not leave the hospital to return at once to their wonted employment. It frequently happens that the sudden strain in this way put upon the bodily powers not yet recovered from the deadly conflict with sickness leads to disastrous results—the least of which, perhaps, is an attack of fever, while in some instances the seeds of permanent organic disease are thereby sown.

So far as to the patients themselves. No one will need to be told how important it is in the interest of the public health that the convalescent from infectious maladies should be kept apart from the healthy until the risk of infection is over. This no less applies to private than to hospital patients. How can the needful isolation be kept up except through the medium of Convalescent Homes? I know an instance in which one of two sisters got scarlatina. She was treated in an isolated room at the top of a large house, and strict quarantine was maintained for fully six weeks. At the end of that time her younger sister, who had remained safely in the house all the time, met the convalescent by accident, and in a few days was herself ill of scarlatina. Very different might the result have been had the sister first attacked been removed to a Convalescent Home in due time. In a word, patients in private practice both require "change of air" and should be removed in order to ensure the safety of the remaining members of the family.

At the present time I believe that in Ireland, at all events, no suitable or adequate accommodation exists for either hospital or private patients recovering from infectious diseases. For the reasons already specified, the Convalescent Wards attached to Poor Law Union or to Epidemic Hospitals, if adequate, are not suitable as temporary residences for the convalescent poor, or labourers, or artisans. In the case of private patients, the stringent provisions of the existing Sanitary Codes [*cf.* "Public Health (England) Act, 1875," sec. 128, and "Public Health (Ireland) Act, 1878," sec. 145], which inflict a substantial penalty on persons letting or taking houses making false statements as to infectious disease, are very properly an obstacle in the way of obtaining lodging accommodation for such patients during convalescence.

If, then, it is conceded that Convalescent Homes are not merely a *desideratum* but a necessity in our warfare with disease, we have now to consider certain points in connexion with the establishment of such institutions for the reception of persons who have been suffering from infectious diseases.

The questions which arise are the following:—

(1.) For what epidemic diseases should convalescent accommodation be provided?

(2.) What form of "Convalescent Home" would be most appropriate?

(3.) The most suitable site and the best plan of buildings?

(4.) The source of the funds required for the establishment and maintenance of Convalescent Homes, and how far should such institutions be self-supporting?

(5.) The constitution of the management and staff?

I will endeavour to answer these queries to the best of my judgment and with all possible brevity.

(1.) The epidemic diseases for which convalescent accommodation is required in the interest of the public health are—(α.) Smallpox; (β.) Scarlatina; (γ.) Typhus Fever; (δ.) Measles. I have arranged them in the order of their relative importance as "preventable" diseases. The long continuance of the period of desquamation in smallpox and scarlatina, the well-known activity of the contagia of these affections during that period, and the manifold dangers to health and life which they bring in their train, render it imperatively necessary that the convalescents from these diseases should be kept isolated for a considerable time.

In regard to typhus, experience teaches that once convalescence has fairly set in there is but little risk of the patient himself communicating the disease to the healthy. The poison is in this stage usually conveyed by means of infected clothing. "Still," writes Dr. Murchison, "it is satisfactory to know that the poison must be highly concentrated to be transmitted by *fomites*, and that *it is rendered inert by cleanliness and free ventilation.*"[a] Nevertheless, the typhus convalescent needs a temporary home, where, free from care and daily toil, he may recruit his shattered strength.

Lastly, as to measles. The poison of this zymotic possesses such strong infective power that very few persons escape an attack. Indeed it is the exception for one to pass from childhood to adolescence without having suffered from measles. This being so, it might seem useless to provide accommodation for the convalescent from this disease. Far from it, for in the first place the ill-health which so often follows measles is best combated by change of air and scene, and in the next place it is our bounden duty as physicians, not less than as sanitarians, to take every possible precaution against the spread of any epidemic disease.

(2.) Assuming, then, that it is needful to provide accommodation for patients recovering from smallpox, scarlatina, typhus, and measles, we have next to consider what form of Convalescent Home would be most appropriate—a large central establishment, or several

[a] Continued Fevers of Great Britain. Second Edition. Page 90.

separate licensed houses. My own opinion is that a General Convalescent Home for Infectious Cases, such as I shall presently describe, would meet all the requirements of the case. But it is a fair subject for debate whether private patients, at all events, might not more conveniently and advantageously be accommodated in isolated Convalescent Homes, analogous to Private Lunatic Asylums, duly licensed like them and conducted on similar principles.

(3.) We now come to what is probably the most important question of all—the most suitable site and the best plan of buildings for a General Convalescent Home. In discussing this question, I will consider the probable requirements of a city of some 300,000 inhabitants—such as Dublin—presuming that the plan I propose can be adapted to the requirements of other towns of different sizes, *mutatis mutandis.*

First, then, as to *site:* it should be rural. The Convalescent Home should be situated in the country—not more, however, than a mile or two from the outskirts of the town, because of the difficulty of conveying convalescent patients to even moderate distances. The site should be an open space of at least 10 or 12 acres in extent, so as to minimise the risk of infection to the neighbourhood and also to permit the patients to take exercise in properly planted and commodious grounds. The site should, if possible, slope gently towards the south, and there should be an abundant supply of good water for drinking, cooking, washing, and flushing purposes.

Secondly, the buildings should be arranged in five groups—one central group for the management; four isolated groups of apartments for the reception of convalescents from the four diseases already named. For the following plan, and the diagrams illustrating it, I am indebted to my friend, Mr. George C. Henderson, C.E.

The Home proposed by him stands on 10 acres of ground, the southern side facing the high road. A and A in Plate I. represent the entrance lodges, from which a semicircular drive leads to a central isolated block of buildings—B—the management. The letter C represents the four isolated groups of wards for the reception of convalescents from the four diseases above mentioned. Each group stands on about 2 acres, and has its own recreation ground. These groups of buildings are all separated from the public thoroughfare by a strip of garden marked D and D on the diagram. In case of exceptional pressure on the available accommodation, provision can be

made at the N.W. and N.E. corners of the site for the construction of temporary additional wards. This is denoted by the letters E and E on the diagram. Each of the blocks C [see Plate II.] is placed due N. and S., and consists of two stories—the ground-floor being for males, the upper floor for females. On each floor are wards for the reception of hospital and private patients, who can be completely separated. The accommodation on each floor is for 10 hospital and 6 private patients. The dormitories in all cases afford 2,000 cubic feet per bed. There are two dayrooms on each floor, as well as two sets of lavatories and waterclosets, and one bathroom. On the lower floor is a kitchen from which provisions are sent to the attendants' room on the upper floor by a lift. It will be seen from the foregoing that Mr. Henderson's design provides accommodation for 128 patients—namely, 48 private and 80 hospital patients. The cost, roughly estimated, of such a Convalescent Home as that now described would probably amount to £20,000, exclusive of the purchase of the site.

(4.) We have next to consider the source from which the funds required for the establishment and maintenance of the Home are to be derived. There are three possible sources of income—(α.) voluntary contributions, (β.) fees paid by private patients, (γ.) the rates.

In England, perhaps, a wealthy and generous public may, of their own free will, provide funds sufficient to start and maintain Convalescent Homes for Infectious Patients. In Ireland, I fear, we cannot depend on voluntary contributions. The experiment has very lately been made in Dublin, and has signally failed. So long as the gaunt spectre of an epidemic overshadows the country, fear may unloose the purse-strings of the people; but with the passing of the danger, the springs of liberality dry up, or—let us charitably assume—are diverted into other channels. Within the past few months Dublin, not only menaced but attacked by a destructive outbreak of smallpox, was asked to give at least £4,000 to found a Convalescent Home. In response to the appeal only £1,200 was collected after immense labour and expense and the lapse of several months.

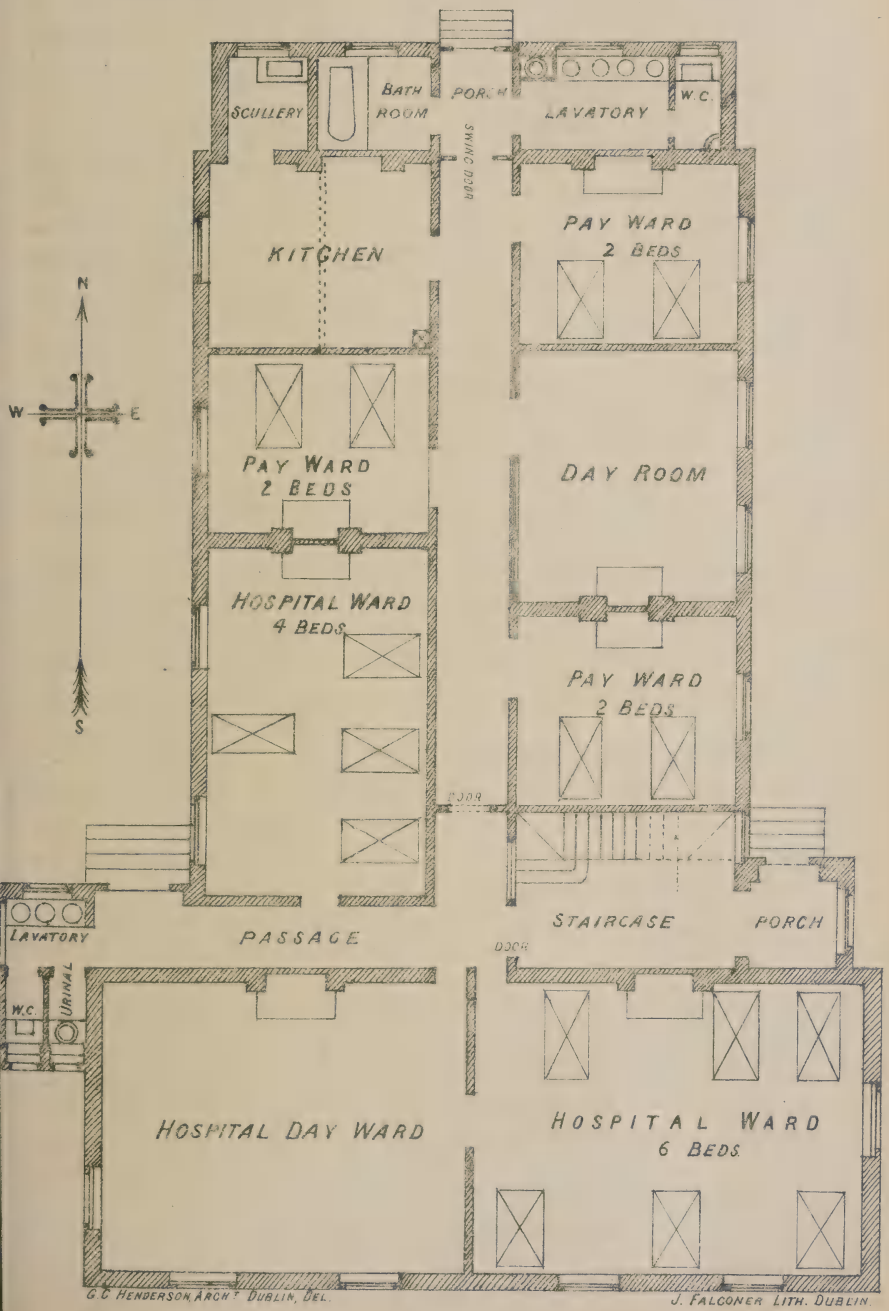
The fees paid by private patients in a General Convalescent Home can never be regarded as a *profitable* source of income. They should not exceed the amount of the expenses incurred[a] through the patients' sojourn in the institution—probably from £1 to £1 10s. or two guineas per week.

[a] See Public Health (Ireland) Act, 1878. Section 156.

Plate. II

PLAN

OF CONVALESCENT HOME



G.C. HENDERSON, ARCH.T DUBLIN, DEL.

J. FALCONER LITH. DUBLIN.

We have then to fall back on the rates as the only fixed and adequate source of income. The Sanitary Codes of England and Ireland contain ample provisions for the levying of rates to supply the funds needful for the construction and maintenance of Epidemic Convalescent Homes. In proof of this, I have only to refer to Sections 12, 153, and 155 of the "Public Health (Ireland) Act, 1878." Section 12 empowers the Local Government Board, by provisional order, to form a united sanitary district for any purposes of the Act, the expenses being a first-charge on the rates leviable in the united district in pursuance of the Act. Section 153 empowers the Local Government Board to combine boards of Poor Law Guardians for the purposes of the Act relating to prevention of epidemic disease, while sections 155 and 156 give power to any sanitary authority as such to provide hospital accommodation for sick and *convalescent* persons, being inhabitants of the district. Similar provisions are contained in the English Sanitary Code,[a] but only so far as relates to hospitals.

The incidence upon the rates of all the expenses of construction and maintenance should not, at the same time, prevent a generous public from expressing their interest in, and showing their goodwill towards, an Epidemic Convalescent Home. They might fairly be asked to provide a library of useful and entertaining books, to supply newspapers and periodicals, flowers for the gardens, pictures for the wards and dayrooms, and so on.

(5.) The last point for consideration is the *management* and *staff* of the institution.

The management should be vested in an elected representative committee, consisting of members of the participating sanitary authorities. In this way all sectarian difficulties would be most easily surmounted. The committee should meet weekly in a boardroom in the central group of buildings.

The staff should be partly resident and partly non-resident. Living on the premises should be a resident medical officer, a lady superintendent, nurses, wardmaids, general servants, and porters. There should also be non-resident chaplains for the different denominations, visiting physicians and surgeons, and a secretary. As to medical attendance, private patients should be at liberty to send for their own physicians on such terms as they and their physicians had mutually agreed upon.

For this imperfect and hasty sketch I have to crave the indulgence

[a] See Public Health (England) Act, 1875. Secs. 131 and 139.

of the Section. My object in making the foregoing observations is simply to open the discussion; and, in doing so, to suggest topics for the consideration of subsequent speakers in the debate. The plan I have proposed is, no doubt, a costly one. But the duty of the physician who is true to the traditions of his noble profession is calmly and thoughtfully to devise means whereby, under Providence, the health of the people may not merely be restored, but be preserved.

In one scale of the balance lie the gold and the silver—in the other are precious lives of fathers, mothers, children rescued from disease, or, it may be, death. Can we doubt for a moment to which side the beam of the balance will incline?

ART. VII.—*On the Experimental Study of Disinfectants.* By J. LANE NOTTER, B.A., M.Ch., M.D., Dubl.; Surgeon-Major, Army Medical Department; Fellow of the Chemical Society; Assistant-Professor of Military Hygiene in the Army Medical School; Diplomate in State Medicine, University of Dublin, &c.

THE term "disinfectant" in the following pages must be understood only to apply to agents which destroy, by chemical action, not only the decompositions which are causally connected with the presence of organisms, but the organisms themselves.

It is only under such a condition of things that we can say with any degree of certainty that the contagia of communicable disease are deprived of their specific action, and anything short of this will not, in the true sense of the term, be "a destructive agent."

It appears to me desirable, for many reasons, to extend our inquiries into this very complex subject, and more especially to investigate into the power various agents are said to possess not only for correcting the putrefactive odour in offensive liquids, but also in subjugating the development of bacteria.

It will be understood that in the following remarks I do not wish to attach too much importance to the coincident appearance or occurrence of microscopic forms, as if to imply that these were the morbific agents. My object is simply to compare the relative powers of various disinfecting agents, and I believe this to be the very best method to adopt in order to arrive at a correct conclusion.

Hitherto the majority of experimenters have contented themselves with noting the power certain agents possess of controlling offensive odours, and with the sense of smell alone decided the

question; but we know as a fact that only a very limited relationship exists between the subjugation of bacteria and the destruction of the putrefactive odour. For example, Condy's Fluid destroys the odour, and the bacteria not only retain their activity, but appear to grow and flourish; while Chloralum, which does not destroy the odour, partly precipitates the bacteria.

In the following experiments I have attempted to place on record a detailed and minute microscopic examination of the effect produced on a measured quantity of beef infusion, swarming with bacteria, by adding to it certain known proportions of various disinfecting fluids and powders.

I believe the full effect only of the agent to be produced when there is an arrest of motion, with complete precipitation and disorganisation of the bacteria, and I have endeavoured in each case to look for this result. I do not consider the formation of bacteria in filmy masses the same as being precipitated. The two forms are quite distinct. In the latter there is total disorganisation; in the former there is only an arrested movement, due to the nature of the surrounding frond in which they are enveloped—they are, in fact, bacteria in the zoogloœa form, their nutritive and excretory processes, as well as the development of the putrefactive odour, being as vigorously carried on as when they exist in a free state.

When these organisms rush across the field, I have called the movement *excursive*, and by this will be understood freedom and activity.

The agents submitted to experiment were the following:—

1. Carbolic Acid (crystals).
2. Carbolic Acid.
3. Chloride of Lime.
4. Chloralum Liquid.
5. Condy's Fluid.
6. Universal Disinfecting Powder.
7. Terebene Liquid.
8. ,, Powder (green).
9. ,, ,, (yellow).
10. Sanitas.
11. M'Dougall's Disinfecting Liquid.
12. Phenyle.
13. Burnett's Fluid.
14. Eureka.
15. Sporokton.

PHYSICAL CHARACTERS, &c.

Carbolic Acid.—A solid mass of long colourless needles, which are liquified at a temperature of 93° F., having the peculiar taste and smell of creasote. It dissolves sparingly in water (1 in 15), readily in alcohol; in olive oil 1 in 1; acid properties are of a very feeble and doubtful character.

Chloride of Lime.—A dull white powder, which has a peculiar smell, partially soluble in water.

Chloralum Liquid.—This is a weak or impure solution of chloride of aluminium. It is perfectly clear, and has the advantage of not being poisonous. In a pure state it is a white crystalline solid.

Condy's Fluid.—This is a solution of permanganate of potash in water. It is easily decomposed by substances having an attraction for oxygen. Very soluble in water, inodorous, with a sweet astringent taste.

Universal Disinfecting Powder.—This powder consists of calcium and sodium chlorides, zinc sulphate, and some borate of lime. It is inodorous, and very deliquescent.

Terebene Liquid.—A dense rich brown fluid, having the odour of turpentine, and quite insoluble in water. When digested with a small proportion of oil of vitriol, oil of turpentine yields terebene.

Terebene Powder (*green*).—This consists of copper sulphate, alum, a little potassium bichromate, and terebene. It has an agreeable odour of thyme.

Terebene Powder (*yellow*).—A yellow powder, resembling damp mustard, partially soluble in water; a whitish sediment forming in a transparent reddish fluid, the whole becoming opaque by mechanical mixture on shaking. It appears to be of the same composition as the green, except that iron is substituted for the copper salts.

Sanitas.—A limpid transparent fluid, of light yellow tint, much resembling the colour of good lime-juice, and having an agreeable smell of new pine wood. It is miscible with water in all proportions, and is not poisonous. Sanitas is stated to contain peroxide of hydrogen, and is a hydrocarbon derived from the resinous exudation of Eucalyptus Globulus.

M'Dougall's Disinfecting Liquid.—This is carbolic acid in admixture with sulphate of lime. It has an orange colour, and smells strongly of creasote. It is miscible with water in all proportions.

Phenyle.—This preparation seems to be a very pure sample of carbolic acid, and may be properly regarded as phenylic alcohol, or phenyle hydrate; it possesses the same characters.

Burnett's Fluid.—This is chloride of zinc in solution; 300 grains are dissolved in every fluid ounce. It has a powerful attraction for water.

Eureka.—A clear fluid, having a peculiar smell, somewhat resembling chlorine. It appears to be a strong solution of chlorinated soda. It is colourless, and miscible with water in all proportions.

Sporokton.—A clear fluid, having an intensely strong smell of sulphurous acid. It contains about 150 grains of zinc chloride to the ounce, and about 80 times its volume of sulphurous acid. It is miscible with water.

Experiment I.

For this purpose a piece of fresh beef was steeped in water, and permitted to pass into decomposition for the development of bacteria. In another vessel some linseed meal was mixed with water, and allowed to stand for some time, but with a more tardy evolution of bacteria.

The activity of the bacteria in these infusions being known by previous microscopic observation, it was proposed to submit a given quantity of each of the above-named agents, and again observe the effect produced under the microscope.

5 C. Cs. of a 10 per cent. solution of—

1. Carbolic Acid (crystals)
2. Carbolic Acid
3. Chloride of Lime
4. Chloralum Liquid
5. Condy's Fluid
6. Universal Disinfecting Powder
7. Terebene Liquid
8. Terebene Powder (green)
9. Terebene Powder (yellow)
10. Sanitas
11. M'Dougall's Disinfecting Liquid
12. Phenyle
13. Burnett's Fluid
14. Eureka
15. Sporokton

were added to 10 C. Cs. of beef infusion, swarming with bacteria, having been kept for nearly three weeks.

The preparations thus obtained were separately examined with the following results. In no case was the offensive odour perfectly removed, but the microscopical appearances were of special interest. The powers employed were the $\frac{1}{4}$ in., $\frac{1}{8}$ in., and $\frac{1}{12}$ in. immersion lens.

Immediate Examination.

Agents used.	Results.
1. Carbolic Acid (crystals).	Bacteria still living, but rather sluggish in their movements; equally distributed in the field.
2. Carbolic Acid.	Same as No. 1.
3. Chloride of Lime.	Bacteria nearly altogether precipitated in filmy, undissolved clouds of the disinfectant; no movement observable in the intervening spaces of the field.
4. Chloralum.	Bacteria largely precipitated in a cloudy deposit at the bottom of the vessel; some few remaining in the free state, with evident but very feeble movement.
5. Condy's Fluid.	Vibrio, spirillum, and other bacteria in active motion, and equally distributed in the field.
6. Universal Disinfecting Powder.	Bacteria quite free, but with much diminished activity; two or three very active monads were, however, also observed.
7. Terebene Liquid.	Bacteria still very active.
8. Terebene Powder (green).	Activity much diminished.
9. Terebene Powder (yellow).	Same as No. 8.
10. Sanitas.	Still very active; many excursive.
11. M'Dougall's Disinfecting Liquid.	Activity diminished; bacteria equally distributed in the field.
12. Phenyle.	Activity very much diminished; none excursive; the flocculi appeared to consist of bacteria studded with extremely minute refracting particles, probably micrococci.
13. Burnett's Fluid.	Activity very much diminished; no excursive movements.
14. Eureka.	Odour not diminished; bacteria very active where in a free state; here and there in zoogloea form; no attempt at precipitation; none excursive.
15. Sporokton.	Odour undiminished; bacteria free and very active; a few excursive; vibrio and spirillum very large, and moving rapidly.

Experiment II.

10 C. Cs. of a 10 per cent. solution of—

1. Carbolic Acid (crystals)
2. Carbolic Acid
3. Chloride of Lime
4. Chloralum Liquid
5. Condy's Fluid
6. Universal Disinfecting Powder
7. Terebene Liquid
8. Terebene Powder (green)
9. Terebene Powder (yellow).
10. Sanitas
11. M'Dougall's Disinfecting Liquid
12. Phenyle
13. Burnett's Fluid
14. Eureka
15. Sporokton

were added to 10 C. Cs. of beef infusion, swarming with bacteria, having been kept for nearly one month.

Evidence by Sense of Smell.

Carbolic Acid and Chloride of Lime instantly removed the smell, but after the lapse of some time it was traceable again in the Carbolic Acid, though only to a limited extent. Chloralum very slightly, while, though Condy's Fluid did not quite remove the offensive odour, its effect was very striking. There was a little improvement with the Universal Disinfecting Powder. Terebene Liquid masked it a very little. The Terebene Powders were most effective, the agreeable smell of thyme completely masking the stinking odour of the infusion. Sanitas had a little effect; the same may be said of M'Dougall's Disinfecting Liquid. Phenyle masked the odour, but not so completely as the impure Carbolic Acid. Burnett's Fluid and Sporokton had a slight effect, while Eureka had not the very smallest—in fact, the putrefactive odour appeared intensified in the last. The Green Terebene Powder altogether subdued the bad smell, substituting for it an agreeable odour of pine wood.

The preparations thus obtained were carefully placed in glass stoppered bottles, and examined by the microscope after the lapse of twenty-four hours.

The powers employed were $\frac{1}{8}$ in. and $\frac{1}{12}$ in. immersion lens.

Agents used.	Results.
1. Carbolic Acid (crystals).	Bacteria nowhere visible in the field as before, but seem replaced by micrococci, with very active motion. No precipitation.

Agents used.	Results.
2. Carbolic Acid.	Bacteria very minute and free in the field, and still very obviously in motion.
3. Chloride of Lime.	Bacteria nowhere visible in the field, but apparently disorganised in their cloudy films, in which they could only be distinguished by an experienced observer.
4. Chloralum Liquid.	Bacteria in zooglœa form, and in the interspaces very active; they seem to be partly precipitated here and there in filmy masses.
5. Condy's Fluid.	Bacteria free, and in zooglœa form; no diminution in the activity, and no attempt at precipitation; many excursive.
6. Universal Disinfecting Powder.	Bacteria free, and in zooglœa form; active, but none excursive; movement somewhat lessened.
7. Terebene Liquid.	Bacteria very active and excursive; no attempt at precipitation; vibrios in large amount.
8. Terebene Powder (green).	Bacteria largely precipitated in a flocculent mass; some very slight movement just perceptible among those free in the interspaces; none excursive.
9. Terebene Powder (yellow).	Bacteria precipitated, and those free in the interspaces were nearly motionless; none excursive.
10. Sanitas.	Bacteria extremely active and excursive; both free and zooglœa forms present; no precipitation; the rods appear very much lengthened.
11. M'Dougall's Disinfecting Liquid.	Bacteria free, and in zooglœa form, and very active; none excursive; no attempt at precipitation.
12. Phenyle.	Extremely minute bacteria visible all through the field; motion very active; none excursive, and no precipitation.
13. Burnett's Fluid.	Extremely little movement; bacteria appear precipitated in some parts of the field; there was more movement in the interspaces.
14. Eureka.	Bacteria very active, and here and there in zooglœa form; no attempt otherwise at precipitation; many excursive.
15. Sporokton.	Vibrios, spirillum, and other bacteria in very active motion; no attempt at precipitation; a few excursive.

Experiment III.

15 C. Cs. of a 10 per cent. solution of—

1. Carbolic Acid (crystals)
2. Carbolic Acid
3. Chloride of Lime
4. Chloralum Liquid
5. Condy's Fluid
6. Universal Disinfecting Powder
7. Terebene Liquid
8. Terebene Powder (green)
9. Terebene Powder (yellow)
10. Sanitas
11. M'Dougall's Disinfecting Liquid
12. Phenyle
13. Burnett's Fluid
14. Eureka
15. Sporokton

} were added to 10 C. Cs. of beef infusion swarming with bacteria, having been kept for nearly one month.

These preparations were treated in the same way as the previous ones, and examined after the lapse of twenty-one hours.

The power employed was $\frac{1}{8}$ in.

Agents used.	Results.
1. Carbolic Acid (crystals).	Micrococci of various sizes in active motion all through the field; very few micro-bacteria present, as though one form has been converted into the other; none excursive; no precipitate.
2. Carbolic Acid.	Same as Carbolic Acid crystals.
3. Chloride of Lime.	Bacteria precipitated in clouds, with apparently vacant interspaces; no movement visible.
4. Chloralum Liquid.	Bacteria partly precipitated, but with large numbers free in the interspaces, still exhibiting movement, which is very apparent.
5. Condy's Fluid.	Bacteria filling the field with very great activity; no precipitation; bacillus very large and extremely active; various forms of bacteria very distinct.
6. Universal Disinfecting Powder.	Motion very much diminished; there was some precipitate, while those in the intervening spaces were reduced in size, and the bacteria generally appeared disorganised.
7. Terebene Liquid.	Bacteria show very great activity; their movements excursive, and, if anything, increased; no precipitation; the oily parts of the fluid would appear to entangle the bacteria mechanically.

Agents used.	Results.
8. Terebene Powder (green).	Bacteria all through the field largely precipitated in flocculent masses; motion of free bacteria in the intervening spaces scarcely visible.
9. Terebene Powder (yellow).	Precipitation not nearly so great as in the green variety; free bacteria more numerous and activity more distinctly apparent, but still no excursive movements.
10. Sanitas.	Activity of bacteria hardly diminished; present both in the free and zooglœa form; no attempt at precipitation; a few excursive.
11. M'Dougall's Disinfecting Liquid.	Bacteria active; many excursive; no precipitate; forms very distinct.
12. Phenyle.	Micrococci of various sizes present; there seems to be a change in the form of the bacteria; the rods are shortened and ultimately assume a micrococci form; activity among these minute forms very great; no precipitation.
13. Burnett's Fluid.	Bacteria in the zooglœa form; movements active in the intervening spaces, but somewhat diminished to what existed in the original fluid; none excursive.
14. Eureka.	Bacteria very active, both in zooglœa form and those free in the interspaces; no precipitation; forms very well defined, especially bacillus; many excursive.
15. Sporokton.	Bacteria extremely active; many excursive; no attempt at precipitation; various forms very distinct and seem larger.

Experiment IV.

The several samples used in the foregoing experiments were kept in bottles with glass stoppers, and fully exposed to light for a period of seven days; they were then examined *seriatim*, as before, with the following results :—

Agents used.	Results.
Carbolic Acid (crystals)—	
5 C. Cs.	Movement of bacteria only jostling, not excursive; bacteria punctate and very well defined; no precipitation.
10 C. Cs.	Same.
15 C. Cs.	Bacteria much more punctate; motion less apparent.

Agents used.	Results.
Carbolic Acid—	
5 C. Cs.	Same as Carbolic Acid crystals.
10 C. Cs.	„ „
15 C. Cs.	„ „
Chloride of Lime—	
5 C. Cs.	Bacteria precipitated in clouds, with apparently vacant interspaces.
10 C. Cs.	Same.
15 C. Cs.	Same; no movement.
Chloralum Liquid—	
5 C. Cs.	Large precipitate; very little movement in free bacteria.
10 C. Cs.	Bacteria more punctiform; motion more active in the minute points.
15 C. Cs.	Same characters as previous sample; few bacteria in the intervening spaces; large precipitate.
Condy's Fluid—	
5 C. Cs.	Bacteria free, and very active and excursive; large zoogloœa masses.
10 C. Cs.	Very active and large.
15 C. Cs.	Same; excursive.
Universal Disinfecting Powder—	
5 C. Cs.	Precipitation very considerable; motion scarcely apparent.
10 C. Cs.	Small cluster of torula observed; precipitate very large; motion of free organisms very slight.
15 C. Cs.	Largely precipitated; free bacteria much reduced in size; active movement more apparent in smaller and more minute points.
Terebene Liquid—	
5 C. Cs.	Activity much reduced; none excursive; no precipitation.
10 C. Cs.	Bacteria more active; one or two excursive; masses taken down in oily liquid.
15 C. Cs.	Bacteria more or less punctate; activity less; absence of elongated forms.
Terebene Powder (green)—	
5 C. Cs.	Bacteria partly precipitated, with free bacteria in the intervening spaces; there still exists considerable movement, though there is a great reduction of moving power; none excursive.

Agents used.	Results.
Terebene Powder (green)—*con.*	
10 C. Cs.	Considerable precipitation and comparatively little movement in the free bacteria in the intervening spaces.
15 C. Cs.	Same characters.
Terebene Powder (yellow)—	
5 C. Cs.	Precipitation large; bacteria show very little movement.
10 C. Cs.	Much greater precipitation; intervening spaces nearly free; those present exhibit scarcely any movement.
15 C. Cs.	Precipitation so far complete that only a very few organisms are visible; in these, however, some activity is observed.
Sanitas—	
5 C. Cs.	Bacteria in full activity, both free and excursive; no precipitation; development of monadina.
10 C. Cs.	Monadina still more numerous; great development of monadina attenuata; bacteria active, but appear less so than in the 5 per cent. solution diluted; fungi developing.
15 C Cs.	Bacteria excursive and in full activity; total absence of monadina.
M'Dougall's Disinfecting Fluid—	
5 C. Cs.	Bacteria large, well developed, and in full activity, with development of monadina attenuata.
10 C. Cs.	Same.
15 C. Cs.	Bacteria free, active, and very excursive.
Phenyle—	
5 C. Cs.	Same as Carbolic Acid, but forms more punctate.
10 C. Cs.	Same.
15 C. Cs.	Same.
Burnett's Fluid—	
5 C. Cs.	Large precipitate; free forms, "few and far between," almost motionless, and exhibiting very little movement; there is a gelatinous appearance of flocculi.
10 C. Cs.	Bacteria fewer and larger precipitation; movement less.
15 C. Cs.	Same.

Agents used.	Results.
Eureka—	
5 C. Cs.	Bacteria very numerous and excursive; apparently reduced in size; very active.
10 C. Cs.	No precipitation; numerous, active, and excursive, chiefly in the form of micrococci.
15 C. Cs.	Bacteria as active as in the original fluid; no change.
Sporokton—	
5 C. Cs.	Large precipitate; free bacteria jostling, but without excursive movements.
10 C. Cs.	Bacteria reduced in size and numbers, with comparatively little movement.
15 C. Cs.	Further reduced in number and size and apparent movement.

Experiment V.

To the several samples used in the last experiments, 10 C. Cs. of a 10 per cent. solution of fresh albumen in distilled water were added.

The first effect of this was to repress all movement in previously active bacteria; but after the lapse of time sufficient to permit a change to take place, the bacteria were resuscitated and were particularly numerous and active in the Chloride of Lime, Potassium Permanganate (Condy's), Eureka, Sanitas, Sporokton; less so in the Carbolic Acid, Phenyle, and Terebene Powder (yellow); unchanged in M'Dougall's Disinfecting Powder or Terebene Liquid (in both exceedingly active and excursive). In the Chloralum Liquid and the Universal Disinfecting Powder the movement was comparatively slight, but in this particular the Terebene Powder (green) appeared decidedly to hold the first place.

Experiment VI.

10 C. Cs. of a 10 per cent. solution of each disinfectant were mixed with 10 C. Cs. of a 10 per cent. solution of recently-made sulphuretted hydrogen and 90 C. Cs. of distilled water in a wide-mouthed bottle, having a strip of lead paper attached to the glass stopper.

Results:—

After fifteen minutes' exposure the following order of merit was given:—

1. Terebene Powder (green).
2. Chloride of Lime.
3. Sporokton.
4. Terebene Liquid.
5. Terebene Powder (yellow).
6. Phenyle.

7. Carbolic Acid.
8. Sanitas.
9. Condy's Fluid.
10. Universal Disinfecting Powder.
11. Burnett's Fluid.
12. M'Dougall's Disinfecting Liquid.
13. Chloralum.
14. Eureka.

A pilot glass, with 10 C. C. solution of sulphuretted hydrogen and 90 C. Cs. of distilled water, gave a colour equal to No. 10.

Experiment VII.

10 C. Cs. of a 10 per cent. solution of each disinfectant were mixed with 10 C. Cs. of a 5 per cent. solution of liquor ammoniæ and 90 of distilled water in a wide-mouthed bottle, having a strip of Nessler's paper attached to the glass stopper.

After twenty minutes' exposure the following order of merit was given :—

1. Burnett's Fluid and Chloride of Lime.
2. Sporokton.
3. Terebene (green) Powder.
4. Carbolic Acid.
5. Chloralum.
6. Terebene Liquid.
7. Sanitas.
8. Phenyle.
9. Eureka.
10. M'Dougall's Disinfectant.
11. Universal Disinfecting Powder.
12. Terebene (Yellow) Powder.

Perhaps the most important feature developed in the several series of experiments I have given is the antithesis of the deodorising power with the destruction of bacteria—the admitted producers of the putrefactive odours.

The facts ascertained may be thus simply stated in relation to the agents experimented with :—

1. Chloride of lime destroyed the putrefactive odour and the bacteria themselves, no free bacteria being visible.
2. Burnett's fluid acted similarly, but a very slight odour remained.

3. Carbolic acid and Phenyle subdued the offensive odour, while the activity of the quite free bacteria is persistent though diminished.
4. Sporokton slightly subdued the odour and diminished the activity of some of the bacteria, while others maintained their power of motion.
5. The Terebene preparations destroyed the odour and precipitated the bacteria in flaky masses, but left some free, isolated, and almost motionless ones in the field.
6. Sanitas acted in the same way, but the activity of the bacteria suffered less change.
7. Permanganate of potash presented similar microscopic characters, but the bacteria seemed to elongate, and torulæ were developed.
8. Very similar characters were presented by Chloralum, the Universal Disinfecting Powder, M'Dougall's Disinfecting Liquid—the odour being affected to a very small extent, while the activity of the bacteria, though very slightly diminished, is persistent in the interspaces—while some are precipitated, others appear in the zoogloœa form.
9. Eureka neither corrected the odour nor checked the activity of the bacteria to any degree worthy of special comment.

If the total destruction of bacteria and their reproductive energy be regarded as the most cogent evidence of disinfecting power, in accordance with our present attainments in this difficult inquiry, the agents above noted are given in the order of their importance. On the other hand, while under ordinary circumstances the impressions of the olfactory sense awaken the apprehension of danger, some of the most virulent morbific agents or influences are so subtle as to be quite imperceptible to that faculty.

On reviewing this series of experiments we find that the correction of the offensive smell and the suppression or destruction of the bacteria do not hold that close correlation that might be supposed *à priori*. But here is, in truth, that nice line of demarcation between Deodorisation and Disinfection—the latter dealing with the cause, and the former with the effect; and until it can be shown that mere deodorants, so called, do not at the same time correct morbific agents other than corporeal bacteria, we do well to be guided by the premonition of the sense of smell.

As the Chloride of Lime has taken first place in these experi-

ments—it being quite unnecessary to add more of the solution to bring about the required result—I would observe that this agent would be more effective than it is commonly found to be if it were previously mixed with water, and then used when well shaken up, after the manner of other liquid disinfectants, instead of being rudely thrown about in the dry state, or mixed up with a little water in a saucer. In these experiments it was found that a solution containing 140 grains of Chloride of Lime to the gallon was strong enough to disinfect a fluid such as that used in the experiments above detailed.

ART. VIII.—*A Spectroscopic Explanation of the Action of Nitrous Oxide.* By CHARLES A. MACMUNN, B.A., M.D. Dubl., Wolverhampton.

THE spectroscope enables us to confirm the conclusion which is now generally accepted, that nitrous oxide produces its anæsthetic effects by stopping the supply of oxygen to the blood.[a] Hæmoglobin exists in two states—oxidised hæmoglobin, the spectrum of which consists of two bands, and deoxidised hæmoglobin, the spectrum of which consists of one band. The deoxidised form can be produced artificially by adding certain substances to blood which have a greater affinity for oxygen than hæmoglobin has—such as an ammoniacal solution of ferrous sulphate, to which enough tartaric acid has been added to prevent precipitation by alkalies, or sulphide of ammonium; indifferent gases also reduce hæmoglobin; so also does the vacuum produced by the air-pump. I myself discovered—though unfortunately anticipated by Koselanski—that venous blood in the body becomes spontaneously reduced after death—evidently an effect of decomposition, since the same thing takes place in blood out of the body when decomposition has begun to set in; but venous blood in the living body gives the two-banded spectrum of oxyhæmoglobin—a fact easily proved; for, if we focus a vein in a frog's web with a high-power objective, then, having thrown it slightly out of focus, substitute the spectrum eyepiece for the ordinary eyepiece of the microscope, we do not get the spectrum of reduced, but that of oxidised, hæmoglobin, because venous blood always contains a certain amount of oxygen. Nor does venous blood, much less arterial, give this band *immediately* after death; a certain time is necessary for the reduction of the hæmoglobin.

[a] Wood's Therapeutics. 1876. P. 268.

But in death from poisoning by nitrous oxide the venous and arterial blood all over the body gives the one-banded spectrum of reduced hæmoglobin, immediately after death, provided the examination of the blood is conducted properly—viz., in the manner I described in *The British Medical Journal*, Feb. 1, 1879—by putting the blood on a glass-slip and at once covering it with a microscopic cover-glass, and then examining with the Sorby-Browning microspectroscope. A Guinea-pig was given nitrous oxide from a dentist's gas-bag until it ceased to exist, and the blood was examined without loss of time. From the right auricle, right ventricle, left auricle and left ventricle, portal and hepatic veins, splenic vein, supra-orbital veins, aorta and muscles, the blood, on being examined, *gave the one-banded spectrum of reduced hæmoglobin.* The right ventricle was firmly contracted and empty; the liver was darker in colour than normal; the cerebral sinuses and cerebral blood-vessels generally were full of dark-coloured blood, which gave the band mentioned above. On exposure to air the spectrum changed to that of oxyhæmoglobin, which was capable of being reduced—showing plainly that the nitrous oxide had not entered into a combination with the hæmoglobin, such as carbonic oxide and nitrous oxide form with it, for reducing agents fail to displace these gases from their combinations with hæmoglobin. I do not wish it to be understood that I am ignorant of the fact that nitrous oxide reduces hæmoglobin in solution, as this is known to readers of modern text-books of physiology; but, so far as I know, no one has examined the blood (of an animal poisoned with this gas) in the manner which I have described, which is the only method not liable to fallacy, and which has already led to some important results.

SPICE-BAG POULTICE.

Warm applications over the abdomen are of great utility in the treatment of infantile diarrhœa. A spice-bag, which is a favourite form of such an application in America, is made as follows:—Take a half-ounce each of cloves, allspice, cinnamon, and anise seeds, pounded, but not powdered, in a mortar; put these between two layers of coarse flannel about six inches square, and quilt them in. Soak this for a few minutes in hot spirits (brandy, whiskey, or alcohol) and water, equal parts, and apply it to the abdomen warm, renewing it when it gets cool. In this way we get not only the effects of a poultice, but we also get the sedative and antiseptic effects of the spices.—*N. Y. Med. Record*, July 12.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Fourteenth Annual Report of the Sanitary Commissioner for Madras, 1877. *With Appendices containing Report on the Medical and Sanitary Aspects of the Famine of* 1876-77, *with Notes on the Pathology of Famine Diseases, and Statistical Tables of the General Population and Vaccination.* Madras: Printed by R. Hill, at the Government Press. 1878. Quarto, pp. 328.

At any time an Annual Report written by the present Sanitary Commissioner of Madras, Surgeon-Major W. R. Cornish, F.R.C.S. Eng., would repay attentive perusal; but the history of the "Famine Year" recorded by such an historian possesses exceptional interest for all who make medicine or sanitary science a special study.

Our readers will remember that a disastrous famine prevailed extensively in the Madras Presidency during the latter part of 1876, and until nearly the end of 1877. Some idea of the terrible nature of the calamity may be gained when we state that in 1877 the total number of deaths registered in the native population of the Presidency amounted to 1,556,312, or nearly three times the average registrations of the previous five years. The whole population, as ascertained at the census of 1871, is 31,597,872; but the total population for which returns were received was only 29,209,542, or more than two millions short of the actual population. The registered death-rate was, therefore, 53·3 per mille; but Dr. Cornish fears that this rate, excessive as it is, gives but a very imperfect idea of the actual mortality of the people in the parts of the country affected by famine. The mortality in 1877, as influenced by the famine, is shown to have fallen with special severity on the young and old, while even the adult able-bodied of both sexes died in unusual numbers.

The Sanitary Commissioner's Report is divided into sections, which facilitate its study considerably. The subjects dealt with

in Section I. are Meteorology and Prices of Food. The peculiarities of the year 1877, as regards climate in the Madras Presidency, were—1st, the intensity of the sun's heat during the early months of the year; 2nd, a cyclonic storm on May 20th, giving in the south-eastern coast districts a plentiful, and in the neighbourhood of Madras a copious, downpour of rain—at the Madras Observatory no less than *twenty-one inches* of rain fell in a few hours; 3rd, a delayed S.W. monsoon, with breaks so prolonged that in many of the districts depending on the early rains the early crops either failed or were greatly delayed on account of the deficient moisture; 4th, a very copious and general rainfall in September and October, continuing on to the usual season of the N.E. monsoon; 5th, violent storms and floods in the southern districts of Tanjore, Tinnevelly, and Madura during the N.E. monsoon, with partial or complete failure of the north-east rains in the coast districts north of Nellore. In connexion with this subject Dr. Cornish has had projected in diagrams the average monthly rainfall in certain typical famine districts, and the results for 1875, 1876, and 1877 compared with the average, so as to indicate the deficient rainfall of the famine period. These diagrams explain at a glance the causes of the defective food supply, and Dr. Cornish believes that, if similar district diagrams were published from time to time for the information of Revenue Officers, they would be of great value in calling attention to the consequences of diminished rainfall.

With actual famine in fourteen out of the twenty-one districts of the Presidency for the greater portion of the year, the feeding of the people naturally became a most difficult problem. In some general remarks on the condition and habits of the labouring poor, Dr. Cornish points out that, with cheap and abundant food, the Indian labourer thrives even under the hard circumstances of his fate; but if his family increases too fast, there is pinching and under-feeding even under the most favourable circumstances. If these are the ordinary conditions of the Indian labourer when the grain he eats is valued at from 60 to 80 lbs. the rupee, we can readily comprehend what must be his sufferings when the price of his ordinary food has advanced so that only 15 or even 10 lbs. are to be bought for a rupee. And this has been the actual condition of the Indian poor dependent on money wages from November, 1876, until nearly the end of 1877, when food became somewhat more plentiful, and prices began slowly to decline.

Dr. Cornish observes :—

"The Indian labourer in Southern India is not, by habit and custom, a rice-eater. His main staples of food are the various millets which are suitable to the soil and climate of the several districts—viz., cholum (*Sorghum vulgare*), ragi (*Eleusine coracana*), cumboo (*Penicillaria spicata*), and others, such as *Panicum frumentaceum*, *Panicum Italicum*, &c. He scarcely knows wheat, nor the way to use it. He eats certain beans, and pulses occasionally, but not to the same extent as do the people of Northern India. He has a great liking for animal food of every description. Nothing in this way comes amiss to him. Fish, snails, frogs, field-rats, game of every description, fowls, goats, sheep, bullocks, and pigs, are all eaten with avidity by the hard-working labouring man—in fact, there is no description of food obtainable from the vegetable or animal kingdom that the labouring classes of the people of Southern India will not use.

"It is, perhaps, a fortunate circumstance in connexion with the late terrible famine in Madras, that the omnivorous habits of the people were so marked. In Orissa Lord Napier and Ettrick was struck with the fact that a caste ridden Ooriah would lie down and die of starvation by the side of a fat bullock. The people of Southern India, on the other hand, will not only eat a fat bullock, but manage to pick up nutriment from the carcase of a beast that has died of their own complaint—chronic starvation.

"It may truly be said that the labouring poor made a great effort to live. When their ordinary food failed them, they used roots, leaves, and fruits from the jungles, and picked the bones of every animal that died, or had to be killed on account of want of forage."—Pages 7 and 8.

To meet the terrible emergency which arose, grains of various descriptions were largely imported into different parts of the country. Various kinds of peas and beans were imported from Bengal, but the chief import was *rice*, even to those parts of the country where rice is scarcely ever eaten by the poor. Commenting on this, Dr. Cornish very truly remarks that a change of food is probably a serious matter for a population under the best of circumstances, but the general substitution of a poor starchy food like rice for the millets richer in albuminoid principles, was, in his opinion, one of the greatest disasters of the famine.

We cannot forbear to quote the following philosophical and humane observations on the relations between the price of food and mortality :—

"When the common food of a people ranges from four to six times its normal price, and when the poorer classes have a difficulty in providing

enough food at ordinary rates, it is very certain that mere subsistence is a task too difficult for those who have no reserves of money or property, and that those least fitted to maintain the struggle for existence must die in large numbers. A humane and thoughtful administration of a famine tract may do incalculable good in helping the population to pass through so terrible an ordeal, but to save an entire population stricken by famine is beyond the power of any Government on earth. If it were possible to get at the people before the pangs of starvation had laid hold of them, the task of keeping them alive and in health would be one of superhuman difficulty; but, as a matter of fact, it is quite beyond the power of any administration to reach all the people, and to afford them needful aid, before they are mortally smitten with that most fatal of all diseases—chronic privation of food. This, at any rate, has been the experience of the Madras famine of 1877, and, so far as the truth has been told, has been the experience of every famine that has afflicted the human race.

"There is a very close connexion between prices of food and the mortality of a population, and the connexion is especially apparent in a country like India, where, at the best of times, from twenty to thirty per cent. of the people have a difficulty in finding sufficient food. Even in London, with all its elaborate municipal and poor-law system, and private organisations for charitable relief, we learn that in 1877 coroners' juries returned verdicts of death from 'starvation' or 'accelerated by privation' in seventy-one instances, and this in spite of the elaborate and costly machinery for the relief of the suffering poor. If such cases can occur in the heart of the civilised world in times of peace and plenty, what may we expect from twenty to thirty millions of the Indian subjects of the Queen and Empress, who have been suddenly placed in the position of having to pay the equivalent of a rise of from 8d. to 3s. for the 4 lb. loaf, not for a week or two, but for a long dreary period of fourteen or fifteen months. We may be quite certain that a calamity of this nature must leave a permanent mark on the country, and that the process of depopulation must proceed *pari passu* with the intensity of food distress, notwithstanding all that the skill and wisdom of a Government may devise to ameliorate the hard lot of the famine-wasted poor."—Pages 9 and 10.

Section II. of the Sanitary Commissioner's Report contains the statistics relating to the European Army in the Presidency for 1877. Food scarcity did not, of course, press upon the men, and the condition of the well-fed and well-cared-for European troops contrasted most favourably with that of the surrounding native populations affected by famine and epidemic disease. The strength of the British troops of the Madras army in 1877 was, according to the Adjutant-General's returns, somewhat over 11,000. The

mortality amongst them, while on the whole slightly in excess of the average of the previous three years, *was considerably less than the mean mortality of the previous eight years.* In Bellary, the very centre of the famine, the mortality of the British troops was less than the average of the preceding eleven years. In Bangalore, the centre of another distressed district, the mortality was slightly above the average. At St. Thomas's Mount, Secunderabad, and Trichinopoly, all centres of general distress and epidemic pestilence, the mortality of British troops was below the average, while at Madras and the Wellington Depôt the deaths in the year exceeded the average.

"Let it be understood," writes Dr. Cornish, "that in regard to peculiarities of climate and causes favouring epidemic disease, the British army in Southern India has been exposed to evil influences just in the same degree as the native population. The intense solar heat of the early months of the year pervaded the European barrack as it did the native hut. In Madras, Bangalore, Bellary, Trichinopoly, and Secunderabad, the British soldier could not take his walks abroad without encountering the victims of smallpox and cholera, and running the risk of personal infection; but we shall see how little these circumstances have affected a body of men provided with wholesome food and drink, and whose domestic sanitation was thoughtfully cared for by the State."—Page 17.

In Section III. of the Report we have statistics relating to the Native Army. The Adjutant-General's returns show that in 1877 the Madras native army numbered about 31,000, of which force the mean annual strength within the Madras command was 26,866. The mortality was higher in 1877 than in any year since 1870.

"The causes are not very far to seek. The native army, like all other classes of the Indian population, has felt severely the pressure of scarcity and high prices during the great famine year. It is true that money compensation is afforded to the native soldier when the price of his staple food is above a certain average, but at the same time he is, in these periods of scarcity, sponged upon by every needy kinsman who has the smallest claim on his hospitality, and, as a matter of fact, he but too often stints himself of his proper nutriment to help those who are otherwise destitute, and thus, by enfeebling his health, becomes an easy prey to epidemic or other disease. The conditions under which the native troops live approach nearly to those of the civil native population, and any causes acting prejudicially on the health of the latter will probably affect

the former in some degree. Famine and pestilence have, in the past year, affected the civil population in a degree never before witnessed by the present generation, and we shall find that the native troops have not escaped altogether unscathed. Cases of smallpox occurred in 16 out of the 44 stations occupied permanently or temporarily by the native army, and cholera in 20 out of 44 stations."—Page 48.

Section IV., on "Jails," illustrates very forcibly the influence of the famine on jail statistics. To quote Dr. Cornish, "Whenever a period of sore distress occurs amongst a native population, the jail statistics of the province show a higher ratio of crime, and the people come into jail broken down in health, and liable to great mortality. During the past year [*i.e.*, 1877] *many thousands of persons in Southern India have committed offences with the sole object of finding refuge and food in the State jails.* The jails, in fact, of the chief famine districts have been very little more than 'relief-houses,' better disciplined and better managed than the homes or 'camps' provided for the starving poor who had patiently refrained from breaches of the law."

The main sanitary facts in connexion with the jails in 1877 were the great increase in numbers, and the enormous mortality due to the miserable condition of the people on admission. For details we must, through want of space, refer to the Report. The diseases of the prisoners were of the same nature as those of the civil population—smallpox and eruptive fevers, cholera and malarious fevers. The ratio of cholera, though very high, was not in excess of the ratio of exceptionally unhealthy years before. Cholera was indeed so prevalent and fatal in the jails as to destroy 25 per 1,000 of the prisoners. Nevertheless it and other epidemic pestilences were nothing like so formidable and fatal as that very deadly disease, "Chronic Starvation." On this point Dr. Cornish remarks:—

"When the food-supplies of a people are insufficient to sustain life, and all the tissues of body have wasted, the mortality occurs mainly as a result of the feeble powers of assimilating food. After the victims of chronic starvation get into jail there is no lack of suitable and nourishing food; and if the issue of nutriment to persons in an advanced stage of chronic starvation can save life, there should be no famine mortality in jails. But experience, whether in jails or famine-relief camps, tells precisely the same story—viz., that there is a stage in the downward progress of those whose food has been habitually insufficient, from which recovery is impossible. When the powers of digestion and assimilation are

impaired, diarrhœa, dysentery, and dropsies set in, the symptoms of which are unrelievable by food or medicine, and death follows. The diseases resulting directly from privation have killed in jails more than three times the number that were cut off by cholera or other epidemic pestilence."—Pages 70 and 71.

It is interesting to note that *pneumonia*, or an inflammatory affection of the lungs, very rapid and fatal in its course, *prevailed almost as an epidemic* in Bellary, Coimbatore, Chittoor, Cuddapah, Nellore, and Salem jails in the cold season.

Speaking of the jail dietary, Dr. Cornish remarks that, owing to the famine and the absence of stocks of dry millets (such as *ragi*, *cholum*, and *cumboo*) in the markets, rice had to be used in lieu of the customary food. He goes on to say—

"Amongst some of our younger medical men and Jail Superintendents, inexperienced in the habits and customs of the people in regard to food, there is generally a desire to employ a rice diet in jails on the breaking out of sickness. As a matter of fact, a rice dietary has been forced upon us almost everywhere during the past year, and so far from saving the people from cholera and bowel-complaints, we have never before had such extreme fatality. It is quite true that the prisoners, if consulted on the matter, would generally prefer to eat a rice diet in jails, but as nine-tenths of the working classes never eat that grain, except on feast days, in their own homes, it is quite clear that the use of anything but the coarser millets in jail dietaries ought to be generally discountenanced.

"These millets contain more albuminates in a given weight, and, being the ordinary fare of the people, are better digested, and tend to keep up the vitality of the people better than rice. I would have given a great deal to have been able to substitute cholum and ragi for rice in the relief-camps of the interior during the main crisis of the famine. A true knowledge and acquaintance with the habits and usages of the people will prevent jail officials taking up erroneous views on this subject."—Page 72.

"General Population" is the subject treated of in Section V. Probably the most important part of this section is that in which Dr. Cornish makes known his observations in regard to the effects of famine on the birth-rate and on fertility. He writes:—

"Long before the statistical evidence on this point was available, my attention was called to the large number of infants in the famine districts who at birth showed all the marks of being famine-stricken. Frequently in such cases the mother had no visible signs of starvation, but her

previous poor living had had the effect of starving the fœtus *in utero*. It seemed probable that if this effect had followed in the case of women already impregnated, a prolongation of the bad feeding would result in a temporary suspension of the female functions leading to conception. Further experience in the examination of many thousands of females on the relief-works went to show that pregnancy was a comparatively rare condition, and in my letter of instructions to the nine Inspecting Sanitary Officers placed at my disposal by Government for duty in the famine districts, special attention was directed to be made to the condition of the women as regards pregnancy. The result of the inquiry was an overwhelming amount of evidence to show that pregnancy in the famine-stricken (after the earlier months of distress) was a very rare condition; that in young women the period of puberty had been retarded, and that the special functions relating to generation were, in the more marked cases of physical emaciation, altogether in abeyance.

"In all the previous literature connected with Indian or other famines, this important matter as regards the up-keep of a population has, so far as I know, never received any practical notice, and I have to claim for myself whatever credit may be due for the enunciation of a truth of the very highest interest in connexion with the physiological and pathological results of famine—viz., that chronic starvation of a population causes diminution not only by death, but by arresting more or less completely the normal increase by birth."—Page 78.

In a table on page 79 the ratio of births to population in certain districts affected by famine is shown from August, 1877, to June, 1878, and the results are very remarkable. The months of July and August, 1877, were the period in which the privation of the people was most general, and, as was anticipated from this fact, the table shows the lowest birth-rates in March and April, 1878. As Dr. Cornish observes—"If the conceptive functions in women fall into abeyance in proportion to the prevalence of distress, we may expect to find in the registered births of the population, nine months after the worst famine period, a relative diminution in the recorded birth-rate."

As might be expected, in some of the municipal towns the mortality during 1877 was excessive—in Madras it was at the rate of 118 per 1,000 of the population annually, in Kurnool 169, in Nellore 99, in Tuticorin 131, and in Erode 252! It is to be noticed, however, that in most of these instances of very high death-rates, the population was abnormally swelled by famine immigrants, and the death-rates given above are calculated, not on the temporary, but on the ordinary, populations.

Section VI. includes a general history of the chief diseases which prevailed during the year.

First comes *Cholera.* The total deaths registered as due to this disease were 357,430, the largest number ever recorded, and equal to an annual rate of 12·2 per 1,000, or to 122 deaths for every ten thousand of the population. A large tinted map of India, appended to the Report, illustrates the mortality from cholera in the Madras Presidency during 1877. The coincidence of bad seasons in Southern India with maximal cholera prevalence is remarkable. Thus, the year 1833-34 of the Guntur famine, in which more than 50 per cent. of the people disappeared, was also a time of maximal prevalence of cholera. The years 1853-54, which were years of drought, were also years of unusual cholera, and the same may be said of 1865-66, and especially of 1876-77. The experience of the last-named epidemic shows that there was no direct relation between the prevalence of cholera in the population and the intensity of famine distress. Still there can be no question that the antecedent conditions of the famine did, in a very great degree, contribute to prepare the people to fall victims to this special form of pestilence. "Cholera epidemics," in the words of Dr. Cornish, "come and go also in years when the seasons and crops are normal, but in these instances, as in the 1869, 1870, and 1871 epidemics, the disease appears to touch very lightly a well-fed and prosperous community." As to the relation between water-supply and cholera, Dr. Cornish remarks that those who look to the condition of a water-supply as explaining the virulence of cholera epidemics, will find ample confirmation of their views in the peculiarities of 1877. He had never before known the general water-supply of the people in so unwholesome and unsatisfactory a condition as in the first half of the year. The various tanks and wells were a good deal fouled, and the water stunk offensively. The reservoir for supplying the town of Madras ran so low that the water had to be pumped into the delivery channel, and, when it reached the consumer, was very much of the consistence of green pea soup, and was offensive to smell and taste. In Madras a large number of wells were cleaned out and brought into use to remedy the defects of the supply from the reservoir, but after the cyclone on the 20th May the Water Works' supply was sweet and good.

Smallpox.—In the past twelve years the registration shows three great epidemic cycles of smallpox culminating in the years

1868, 1873, and 1877. The total deaths registered in each of those years of maximal prevalence were—

1868	-	-	34,330
1873	-	-	51,784
1877	-	-	88,321 (Famine year).

Dr. Cornish observes—

"The prevalence and mortality of smallpox in the past year was greater than at any time within my own experience of the country. The condition of the population was such as to be eminently favourable to the spread of a contagious disease like smallpox. Many thousands of the labouring classes wandered away from their homes to the nearest towns or markets, or to relief-works or camps, so that the people got herded together in large crowds, and at night every resting-place affording shelter was dangerously overcrowded. It was quite remarkable to see the indifference of the people in regard to smallpox. I have seen a man, his body almost nude, and covered from head to foot with smallpox pustules, elbowing his way through a crowd at the distribution of food; I have seen persons also in the midst of crowds in the streets of Madras in the same condition, and in the earlier days of relief-camps it was a common sight to witness women and children in all stages of smallpox, sitting close by others free of the disease, awaiting the distribution of food. To the promiscuous herding and close association of the people in the principal food or labour centres, and to their wandering habits, is, I think, to be attributed the very general distribution of smallpox."—Page 137.

Fevers caused 469,241 deaths in 1877, the fever death-rate for the whole population being 16·0 per 1,000 against 7·6 per 1,000, the mean rate of the preceding five years. But this excessive fever mortality was very unevenly distributed. In a first series of eight districts *only very partially affected by famine or food-scarcity*, the fever deaths averaged only 7·1 per 1,000 of the population; whereas in a second series of thirteen districts, in which the people had suffered greatly from famine distress, the average mortality from "malarious fevers" rose to 22·9 per 1,000. A question of some interest arises as to the type of fever which in 1877 caused such destruction of life throughout the Madras famine tract. Dr. Cornish, after alluding to the "relapsing fever" of the Irish famine period, and to the opinion recorded by Dr. Graves that "relapsing fever" was not a necessary accompaniment of famine, but rather an accidental circumstance in connexion with the Irish famine, states that the fever which was so

destructive to the people of the Madras Presidency in 1877 was nothing more than the ordinary malarious ague. Among the strong and well-to-do it occasioned a very slight mortality, but among the weakly and half-starved victims of the famine it proved very fatal.

In speaking of "*Bowel-complaints*," Dr. Cornish makes the following interesting remarks:—

"A healthy evacuation of the bowels was the exception, and fluxes the rule, in all who had undergone a certain degree of starvation. In chronic starvation there is a gradual waste of the tissues of the body. First of all the fat disappears, then the glandular structures shrink and muscles waste, and the special anatomical structures engaged in the absorption of nutriment from food cease their functions, and disappear in the general waste. When the degeneration of the lacteals has progressed so far as to impair their functions, recovery is hopeless. Whatever food may be swallowed is passed, for the most part, undigested, and the various tissues of the body receive little or no nutriment. Diarrhœa and dropsy of the whole body are the usual endings of four-fifths of the famine-stricken, but in many cases the texture of the mucous membrane of the bowels is not only wasted, but inflamed and ulcerated as in chronic dysentery."—Page 143.

He adds:—

"The distinction between chronic and acute starvation, if I may judge from current famine literature, is not recognised, even at the present time, after all our long and dreadful experience of the past year. A very common notion still prevails that so long as a person has food to swallow he cannot be said to die of 'starvation,' and those who countenance such a theory quite forget that, as a fact, hundreds of thousands in the past year have been mortality-stricken from prolonged insufficiency of food, long before they came under the supervision of the administrators of famine-relief. There are two varieties of starvation recognised by all physiologists and practical physicians. The 'acute' form, in which all food and drink is withheld, as in people shipwrecked at sea, or shut up in mines; and the 'chronic' form, in which the daily nutriment necessary to the wants of the body is defective in quantity or quality. The 'acute' form of starvation slays its units—the 'chronic' form its tens of thousands. It is the latter form that we have to take notice of in seasons of dearth and food-scarcity, but of late years a fashion has sprung up of referring mortality, that unquestionably ought to be shown under the head of 'privation' or 'starvation,' as due to disease, and in this way attention is diverted from the real fount and origin of excessive death-rates."—Pages 146 and 147.

Into the consideration of Sections VII. and VIII. (on "Sanitary Works"—Military and Civil) we cannot here enter, although they are well deserving of study.

Section IX. includes "General Remarks," amongst which we find the account of a discussion which arose between Sir Richard Temple and Dr. Cornish in regard to the adequacy of wages on famine relief. This discussion is so important from a State Medicine point of view, that we must refer to it somewhat in detail, notwithstanding the length to which this notice, or rather *précis*, of Dr. Cornish's Report has already run.

Early in January the Government of India had delegated the Hon. Sir Richard Temple to visit the famine districts, and, amongst other suggestions for reduction of the cost of famine, Sir Richard Temple, in his minute dated 19th January, written after inspection of the relief operations in Bellary district, suggested that the basis of relief wages might be taken from the value of 1 lb. of grain per diem instead of $1\frac{1}{2}$ lbs. as heretofore; that, in his opinion, 1 lb. of grain a day might suffice to maintain life, and that the experiment ought to be tried, as Government was bound to do no more than sustain life.

The recommendation thus made had been provisionally adopted by the Madras Government, after consideration, before Dr. Cornish had had an opportunity of seeing the minute, but on its appearance in the *Gazette of India* of February 3rd, he addressed a letter to the Madras Government, in which he showed—as we think, conclusively—the extreme risk of reducing the wage-rate so dangerously low that the labourers would be unable to get sufficient food to keep up health and strength. Dr. Cornish appeals to Sir Robert Christison, Bart., in support of his views, and that veteran physician expresses his opinion, in a letter dated Edinburgh, April 18th, 1877, that the dietary proposed by Sir Richard Temple was both insufficient in quantity and *ill-chosen*.

The question may be thus briefly stated in Dr. Cornish's own words:—

The physiological needs of the adult human body, according to all scientific investigators, necessitate the expenditure of from 140 to 180 grains of nitrogen in 24 hours *while the body is in a state of rest*. In ordinary labour about 300 grains of nitrogen will be excreted, and under great physical exertion, such as that of walking for many hours consecutively, from 500 to 600 grains.

The quantity of nitrogen in 16 oz. of rice may be from 68 to 80

grains; in *ragi* or *cholum* somewhat more—about 100 grains—and less than wheat (116 grains). Any dietary which contains less than 200 grains of nitrogen for natives of India will not permit of severe labour or task-work. It comes, therefore, to this—whether in a dearth of supplies, like that in 1877, a man engaged on task labour, and paid at the rate of 1 lb. of grain per diem and half an anna in cash, can with the latter coin purchase a sufficient amount of nitrogenous nutriment (to say nothing of salt, oil, condiments, vegetables, and firewood) to make his daily ration equivalent to 200 grains and upwards of nitrogen. The reply is, simply, that neither in the shape of meat, fish, *dhall*, milk, or buttermilk, can he procure a sufficiency to eke out the defects of his grain ration.

Section X., on "Vaccination," shows that, during the official year 1877-78, 787,730 persons were vaccinated, or 304,538 in excess of the previous year. This great increase in numbers was entirely due to the circumstances of the famine, which brought the village people in crowds to relief centres and poorhouses, and, as Dr. Cornish naively remarks, advantage was taken of the opportunity to extend the practice of vaccination as much as possible.

There are three Appendices, to which we can only allude. Appendix I. contains an article on the "Sanitary and Medical Aspects of the Famine of 1876-77," by Surgeon-Major Cornish, and one entitled "Notes on the Pathology of Famine Diseases," by Surgeon-Major A. Porter, M.D., Surgeon 4th District, Madras. To Chapters III., IV., and V. of the former paper we would draw special attention. The subjects treated in them respectively are—in Chapter III., the Physical Signs of Chronic Starvation; in Chapter IV., the General Diseases of Famine; and in Chapter V., the Special Diseases of Famine. Surgeon-Major Porter's paper is based on 450 autopsies made on the famine-stricken who died in the Royapetta Hospital Sheds up to March 31, 1878, comprising 220 males, 152 females, and 78 children. Appendices II. and III. consist almost entirely of tables—the former illustrating the Vital Statistics of the General Population, the latter including Vaccination Returns.

Space will not permit us to do more than again to commend this most valuable Report to the attention of all sanitarians and statisticians. It is well arranged and most attractively written, so that it disarms any attempt at hostile criticism. Indeed all we

have aimed at in the foregoing pages is to give an accurate abstract of what must be regarded as a sterling contribution to Sanitary Science.

J. W. Moore, M.D.

Medico-Chirurgical Transactions. Second Series. Volume the Forty-third. London: Longmans, Green, Reader, and Dyer. 1878. 8vo. Pp. 324.

The Royal Medical and Chirurgical Society of London, in publishing its *Transactions* for 1878, makes another valuable contribution to medical scientific literature. We will endeavour to present our readers with an outline of a few of the most interesting papers contained in the present volume, in the belief that a concise analysis of monographs written by some of the ablest thinkers and most practised physicians of the day cannot fail to be instructive.

The first paper is by Dr. Sansom, Assistant Physician to the London Hospital, on a case of Noma, in which moving bodies were observed in the blood during life. The points of interest are chiefly (1) the discovery, in the blood and excretions of a little girl, aged four years and three months, suffering from noma, of minute translucent bodies in active movement—noma is therefore added to the list of diseases in which organisms, or quasi-organisms, may be present in the fluids; (2) the observation that these bodies had peculiar characteristics; and (3) the demonstration that the diseased structures, as well as the blood, possessed the faculty of virulent infectiveness, inoculation of the blood inducing the manifestation of motile particles similar to those which itself contained.

The author thus describes the examination of the blood during life:—

"Microscopical examination of the blood obtained from punctures of the fingers and the toes was first made on February 15th, the third day after the child's admission. It was at once seen that there was a considerable excess of the white elements. The coloured corpuscles very rapidly formed rouleaux with very large interspaces in which might be seen many colourless cells, which, before coming to rest, seemed to exhibit their amœboid movements with more than usual activity. The appearances conveyed the idea, not only that the white elements were in excess, but that the coloured elements were in deficient proportion. The protoplasm of the white elements seemed to be abnormally granular, and the fluid plasma was seen to contain fragmentary leucocytes and many

minute masses of granular matter. The minute particles, when examined by a higher power (7 or 8 Hartnack), were seen to consist of two varieties—*first*, granules so commonly seen in conditions of pyrexia; *secondly*, small, highly-refractile bodies endowed with powers of rapid locomotion. On account of such motion the exact shape of these bodies was difficult to determine, but, when comparatively still and a little out of focus, each one refracted light in such a manner that a small bright cross was visible in its substance. Thus they resembled crystals of oxalate of lime, with the exception that they were not perfect octahedra, but appeared as fragmentary crystalloids.

"The movement of these bodies resembled that of very minute bacteria. It was lineal and sometimes opposed a current in the fluid; thus, two or three which were observed to be attached to a red blood-corpuscle were seen to move the corpuscle in a direction opposite to that in which many other corpuscles immediately surrounding it were carried. It had no resemblance to Brownian or molecular movement—in fact, the two varieties of movement could be observed in the same field, portions of molecular matter being agitated in the 'swarming' manner of inorganic particles, whilst the refractile bodies proceeded with greater velocity in a far less limited area, and described straight lines rather than circles. Occasionally one of the translucent bodies was seen to revolve many times upon its axis, and then suddenly to start away in a straight line with that apparently purposive progress which characterises some bacteria. The field having been watched for a few minutes, very fine fibrillæ were seen to start from the ordinary still particles of granular matter, and to extend in all directions; the meshes of the network thus formed enclosed the refractile bodies, at first limiting their movements and afterwards bringing them almost, or completely, to rest.

"It was found that the addition of a two per cent. solution of carbolic acid to the blood during observation immediately caused the movements of the translucent particles to cease. At the same time it produced rapid changes in the normal elements, the coloured corpuscles assuming an appearance resembling that produced by a two per cent. solution of tannic acid—the œcoöid and zoöid of Brücke. A solution of quinine also stopped the movements. On the other hand, heat induced an acceleration of the characteristic motion; a very dilute solution of potash also increased the movements, whilst the granular matter was dissolved and the corpuscles variously altered; a weak solution of sulphuric acid also stimulated the activity of the translucent bodies and caused some that were previously at rest to assume movement. These reagents did not destroy the translucent bodies nor change their outline.

"The coloured blood-corpuscles showed strange variations in size. Some measured $\frac{1}{3200}$ inch in diameter, whilst others were as small as $\frac{1}{6000}$, and between these extremes there were many gradations. The

smaller corpuscles acted upon transmitted light exactly as the larger; their contours were circular and regular, and all the corpuscles were of the same tint. The protoplasm of the white elements appeared to be more diffluent than normal; there were small detached masses and granular *débris*."—Page 5, *et seq.*

Specimens of (1) the blood collected at the autopsy from the right side of the heart; (2) the fluid discharges from the wound, which had been preserved in sealed capillary tubes, were inoculated into animals—mice, a cat, and a Guinea-pig. The result of the experiments went to show that, whilst inoculation of the fluids derived from the diseased tissue (with the decomposing matters which they necessarily contained) induced peritonitis without discoverable alteration of the blood, inoculation of the diseased *blood* produced septicæmia with the manifestation of the characteristic motile particles observed in the original disease.

The second paper in the volume is by Mr. Barwell, Surgeon to the Charing Cross Hospital, on a large Aneurism of the Aorta, Innominate, Subclavian, and Carotid Arteries, which was treated successfully by double distal ligature. The patient, a man aged forty-five, a labourer in a foundry, unfortunately succumbed to an intercurrent attack of pneumonia, but his aneurism was, to all intents and purposes, cured.

Mr. W. Morrant Baker describes the removal by operation of a hairy mole occupying half the forehead of a girl aged ten years. The treatment consisted chiefly in slicing off the surface of the mole as smoothly as possible with a sharp scalpel, care being taken, while cutting away both the epidermis and corium, not to remove the whole thickness of the latter, in order that the subcutaneous tissue might be left untouched. The surface was allowed to scab. Several similar operations were performed, and nitric acid was subsequently used as a caustic—the treatment altogether extending over three years. The result was perfectly successful. The author is disposed to attribute some part, at least, of the evenness of surface and absence of contraction of the scar to the fact that the scab was allowed to remain untouched until the wound beneath was soundly healed.

Dr. W. M. Ord, of St. Thomas's Hospital, contributes a paper on "Myxœdema," a term which he proposes to apply to an essential condition in the "Cretinoid" affection described by Sir William Gull as sometimes supervening in adult or middle life in women. Dr. Ord suggests that the whole collection of symptoms observed

in these cases are related as effects to jelly-like swelling of the connective tissue, chiefly if not entirely consisting in an overgrowth of the mucus-yielding cement by which the fibrils of the white element are held together. Hence the term "Myxœdema."

At the meeting of the Society in December, 1877, Dr. W. T. Gairdner communicated a paper by Dr. Joseph Coats, of Glasgow, on the Pathology of Tetanus and Hydrophobia. The material at the author's command was, in the case of tetanus, certain parts of the nervous system in five human cases of traumatic tetanus, and one case in the horse. In the case of hydrophobia he examined the nervous system in two human cases and in one dog, and some of the internal organs in two dogs—the nervous system not being preserved in one of them. The author sums up the bearings of the observed facts on the two diseases in question as follows:—

"In the first place, as to hydrophobia, we found in the central nervous system certain lesions which I do not presume to regard as distinctive of that disease, but which may, I think, be fairly considered evidences of irritation. There were leucocytes aggregated around the vessels and infiltrated into the nervous tissue, often in great numbers. But these evidences of irritation did not exist only in the nervous system. The salivary glands, in the cases in which these were investigated, presented appearances strictly analogous to those in the nervous system—leucocytes around the vessels and infiltrated between the glandular elements. The kidneys also presented changes, the vessels were much dilated, and, more important than this, there were immense aggregations of leucocytes inside some of the veins, and also hæmorrhages. The existence of signs of irritation in all these organs, and the direct connexion of these signs with the blood-vessels, is exceedingly suggestive of the existence of some irritant in the blood which has acted on the vessels primarily.

"In the cases of tetanus subjected to examination, there were in the nervous system appearances which, though by no means identical with those in hydrophobia, are still, to my mind, strongly suggestive of irritation, and of irritation acting out from the blood-vessels. There is an exudation around the vessels, or a granular disintegration, and this lesion certainly suggests some irritant within the vessels. It is also to be noted that, while the relation to the blood-vessels of the respective lesions in tetanus and hydrophobia is similar, the distribution of these lesions in different parts of the nervous system is also remarkably similar. In both the lesions occur around the larger and medium-sized vessels of the cord, around the vessels of the medulla oblongata in a high degree, and in the convolutions to a slight extent. In tetanus the other organs have not

been examined, and it cannot be said whether there are evidences of irritation in them.

"In regard to the symptoms in these two diseases, few will deny that in hydrophobia they are related to some poison circulating in the blood, and attacking specially the central nervous system. In the case of tetanus this view, though supported by very high authorities, is not generally received. Looking, however, to the fact that on the one hand the symptoms in both these diseases have a closely analogous anatomical distribution, and that on the other hand the lesions, though different in kind, are so similar in distribution, it seems to me very natural to suppose that in tetanus also there may be some poison circulating in the blood and causing disturbance. In this connexion it may be said that the high temperatures observed in tetanus—sometimes reaching a startling elevation, are more suggestive of a general disease, these temperatures not bearing any constant relation to the exaggerated muscular contraction."—Pages 92, 93.

The space at our disposal will not permit us to do more than mention valuable papers by Dr. George Thin on the Proportion of Red Blood-corpuscles in the Blood in some Skin Diseases, and by Dr. Vivian Poore on "Writer's Cramp," in which he gives an analysis of seventy-five cases of "writer's cramp" and impaired writing power.

One of the most important contributions to the volume is from the pen of Sir Henry Thompson, F.R.C.S., who gives an account of 500 cases of operation for stone in the bladder of the adult male, comprising the author's entire experience of such cases to January, 1877. The calculi removed in all these cases were, with a few exceptions, laid before the meeting of the Royal Medico-Chirurgical Society at which Sir H. Thompson read his paper. Of the 500 cases, 422 were operations by lithotrity, and 78 were by lithotomy—the relative proportion being 2 cut for every 11 crushed, or 1 cut in every $6\frac{1}{2}$ cases. The mean age of the 500 cases is no less than $61\frac{1}{2}$ years—the youngest being 20 years of age, the oldest 84 years, while only 12 patients in the entire list are below 30 years. The number of individuals is 440. Several of the lithotrity patients have been operated on twice, five as many as three times, and there is one very remarkable instance of four operations on the same individual. Of the 500 calculi—"313 were uric acid and the urates, in the ordinary sense of the term—in all calculi there is usually found a slight admixture of other varieties; 99 were phosphatic of the ordinary kinds; 50 were mixed, urates and phosphates; 9 were mixed, urates and oxalates; 16 were oxalate of lime; 6 were

mixed, oxalates and phosphates; 1 was cystic oxide; 1 was pure phosphate of lime; 1 was phosphate and carbonate of lime, probably formed on large nuclei from the prostate; 4 were phosphatic, deposited on foreign bodies introduced into the bladder—these being, in two cases, a portion of exfoliated bone; in one a piece of sealing wax, and in one a piece of bougie."

In the 422 cases of lithotrity there were 32 deaths, or a mortality of $7\frac{1}{2}$ per cent., or one death in rather more than 13 cases. In the 78 cases of lithotomy there were 29 deaths, or about one death in $2\frac{3}{4}$ cases. Taken collectively, in the 500 adult cases treated by both operations, there were 61 deaths, or a total mortality of 12 per cent., or one death in $8\frac{1}{2}$ cases. Sir Henry compares this result with the mortality recorded as the result of lithotomy and lithotrity by Cheselden, Martineau, Brodie, and Fergusson—namely, 69 in 422 cases, nearly $16\frac{1}{2}$ per cent., or one death in slightly more than 6 cases.

In some remarks on the most important incidents which occurred in his operations, Sir Henry states that on one occasion he broke a lithotrite in the bladder, removing the broken piece and the stone next day by lithotomy. On another occasion a piece of uric-acid calculus became impacted in a lithotrite, which could not, in consequence, be withdrawn. Urethrotomy was performed, and the instrument was then set free. Special attention is drawn to the risk of perforating the walls of a diseased bladder by the staff—an accident which twice caused death in Sir Henry's experience. Secondary hæmorrhage was fatal in three cases, on the ninth or tenth day after the operation. He wounded the rectum four times, and points out that this accident is more likely to occur in the case of elderly men, in whom the rectum is sometimes a remarkably capacious cavity. Sir Henry concludes his eminently practical paper with an analysis of the causes of death in the sixty-one fatal cases, and with a few remarks on the after-history of elderly patients who have been submitted to lithotrity.

Among the many first-class articles in this volume is one by Mr. Jonathan Hutchinson on Paralysis of the Internal Muscles of the Eye (*Ophthalmoplegia interna*)—a group of symptoms which probably indicates disease of the lenticular ganglion.

The author observes:—

"The lenticular ganglion receives branches from three sources, two of them motor, and one sensory; the third nerve, the vasomotor, and the fifth. The distribution of the sensory filaments proceeding from the

ganglion cannot easily be identified in bedside observation, since the front of the eyeball receives nerve-supply from the other branches of the fifth, and it may be conjectured that no appreciable anæsthesia would result from destruction of the small filaments which pass into the ganglion. The motor roots, however, supply important structures—the iris and ciliary muscles—paralysis of which can easily be appreciated.

"The symptoms which *à priori* would be expected to result from destruction of the lenticular ganglion are iridoplegia, or paralysis of the iris, both as to its circular and radiating fibres, and cycloplegia, or paralysis of the ciliary muscle. My suggestion is that when this triad of symptoms is present—inability to use the ciliary muscle, paralysis of the dilating fibres of the iris, and paralysis of the contracting fibres of the iris—without any other form of orbital paralysis, the seat of disease can be in no other structure than the ganglion itself. The diagnosis depends equally upon the presence of all three, and the absence of all others. If, for instance, any of the recti muscles are affected also, we are at once carried further back to the trunk of the third or sixth nerve; and if only one or two of the separate symptoms forming the triple group were present, the inference would be ready that the disease might be seated either in front of the ganglion or behind it in the trunk of the nerve involved. The ganglion itself is the only place where the two motor nerves (third and vasomotor) are in contact, and where both may be affected by disease which does not involve any other parts."—Page 216.

Mr. Hutchinson details eight cases in support of the foregoing views, and in conclusion states that there is another group of cases in which all the external muscles of both eyeballs become either in succession, or simultaneously, partially paralysed, and for which he will venture to propose the name *Ophthalmoplegia externa.*

We cannot close this notice without naming a contribution to the pathology of Hæmophilia, by Mr. Percy Kidd, B.A., Oxon.; one on the pathological traces of Pulmonary Hæmorrhage, by Dr. Reginald E. Thompson; and one on the *Spirillum* Fever of Bombay in 1877, by Dr. H. Vandyke Carter, of Her Imperial Majesty's Indian Army. This last-mentioned paper cannot fail to be one of exceptional interest to sanitarians and to students of pathology.

Dr. Carter writes:—

"That this fever (which, after a year or more, yet lingers amongst the poorer classes) is identical with the 'hunger-pest,' 'famine- or "relapsing-" fever,' or the so-called 'recurrent-typhus' of Europe, I hold to be now fully demonstrated; and this fact I regard as one of great significance in Indian pathology. The demonstration just referred to has resulted from the combined use of the clinical thermometer and

microscope; and I am not aware of any data invalidating its force. Assuredly, the negative circumstance of the same fever not having been detected in other parts of the Bombay Presidency, or in the famine districts of Madras, can in no way detract from the weight of positive proof acquired in the western capital. Such proof is as follows:—1. The rather abrupt appearance of a malady evidently connected with unusual and excessive want, fatigue, and overcrowding; its spread with the increase, and subsidence with abatement of these hygienic defects. 2. The remarkable resemblance in clinical characters of this new malady with the relapsing fever of Europe—a resemblance so close as of itself to be decisive of actual identity. 3. As a special feature, the invariable presence in the blood, during pyrexia, of a minute parasite which, so far as known, is peculiar to one form of fever only—viz., the relapsing.

"Thus there are combined the natural history of an epidemic, the symptoms of a fever and the pathology of blood-contamination; each of these fundamental features displaying special characters pointing to but one conclusion.

"And almost equally significant with the above, as regards diagnosis, is the observation that this new fever raged most at that season of the year when malaria least of all abounds. I should add, too, that anti-periodic remedies, such as quinine, had no influence in checking recurrence of the febrile paroxysms."—Pages 273, 274.

Dr. Carter's paper is illustrated by two beautifully executed plates showing the spirillum of recurrent or relapsing fever. The author thus describes the *Spirillum* (*Spirochæte*, Ehr.):—

"Its ordinary aspect is that of a colourless, homogeneous, and very delicate, spirally-twisted filament, which, during life, is in constant motion amidst the *liquor sanguinis;* the length varies from $\frac{1}{1500}$th inch to $\frac{1}{300}$th inch; its breadth is immeasurably slender, or probably not more than the $\frac{1}{4000}$th to $\frac{1}{50000}$th inch. The spiral or corkscrew twist is regular and best seen when the organism is quiescent or after its death, whilst during active movement (especially the lashing side movements) it becomes undone and may almost disappear—the filament meantime gaining in apparent length. The motion of the spirillum, though continuous, is transiently intermittent and not constantly in the same direction; it is compounded of a rotation on the long axis—which is the most characteristic—a lateral or lashing movement, and a progression forwards or backwards; all these actions may be so rapidly performed as to puzzle the eye of the observer, who sees only swarming or shooting non-defined bodies traversing the field of the microscope. The filaments have neither head nor tail, possess a firm consistence, and are highly flexible and elastic, but not contractile in the proper sense of the word; a faint yellow tinge has been noticed within them, and their visibility partly depends

upon the clearness of the medium they inhabit. Not much variety in their general aspect and characters has been detected—that of dimensions being the chief. Vital movements may persist some time after death of the body (I have seen them thirty-five hours afterwards), or after removal of the blood from the living subject; they gradually cease, a brief lashing or twirl being noticed at long intervals in the midst of the countless bacteria and bacillar rods which so soon grow up, and finally the spirillum disintegrates and disappears, leaving no organic trace behind."—Page 294.

The volume is, as usual, brought out very handsomely by the Messrs. Churchill, of New Burlington-street, London, W.

Lettsomian Lectures on Bronchial Asthma. By J. C. Thorowgood, M.D., Lond., F.R.C.P.; Physician to the City of London Hospital for Diseases of the Chest, &c. London: Baillière, Tindall, & Cox. 1879. Pp. 86.

This small volume contains the three Lettsomian Lectures that were delivered at the Medical Society of London in the spring of the present year. In discussing the protean malady the author has had the advantage not only of an intimate knowledge of the views of previous writers, but also of possessing a wide field for original research. He is a firm believer in the existence of an "essential, independent, spasmodic, bronchial asthma, dynamic in nature, and symptomatic only of some great nervous perturbation—at times centric and emotional, at other times reflex, in its mode of origin—capable, too, of artificial production by direct irritation applied to the trunk of the vagus nerve." He does not deny that local congestion of the pulmonary mucous surfaces may give rise to an acute attack of dyspnœa, but he adduces a variety of reasons, clinical and physiological, for regarding bronchial asthma as an essential primary neurosis. He has repeatedly ascertained that after a night of intensely severe asthma, brought on by nervous excitement, there is no rise of body temperature. He quotes Volkmann's experiment of irritating the vagus, and producing thereby spasm of the bronchial muscle sufficiently strong to make the contracting lung blow out a candle. Lately a good deal has been said as to the inspiratory or expiratory character of the dyspnœa during a fit of asthma, but Dr. Thorowgood believes that both respiratory acts are impeded more or less; sometimes inspiratory difficulty is more urgent, at other times and in other cases expiratory effort is

nounced and unmistakable. He has generally found that in proportion as lung emphysema is developed, so does the expiratory dyspnœa obtain the ascendancy. In young persons, where there is marked spasm without much emphysema, inspiratory dyspnœa is often most severe and distressing. In these cases the diaphragm is drawn up. Although the author is opposed to Wintrich's and Bamberger's theory that the seizure is due to tonic spasm of the diaphragm, he believes the theory of Lebert—that the spasm beginning in the bronchial muscles, and thus narrowing the tubes, causes a great excess of inspiratory effort to force the air through the constricted bronchi, and then that this increased respiratory stimulus, reflected to the medulla and respiratory centres, induces reflex spasm of the diaphragm through the agency of the phrenic nerve—to be ingenious and deserving of attention. It appears to accord with the fact that we see cases of ingravescent or culminating asthma, slight at first, but getting gradually worse till a state bordering on true apnœa is produced, and to aid the violent inspiration every auxiliary muscle is called into action. The most intractable of all cases he states to be those of "atrophous emphysema," complicated with "diaphragmatic palsy and inertia." "I see cases of persons with no great amount of bronchial spasm, who are always short-breathed, have weakness of voice, often tendency to vomiting both on full and empty stomach, and whose chest and abdomen are distended, prominent, and motionless. If there be a remedy, it must be sought in climate rather than in physic." "Nux vomica," he adds, "and strychnia—remedies so very useful in pure emphysema—were quite powerless in this condition of diaphragmatic inertia. It is worth while always to seek for a small zone of congested capillary vessels, which at times may be found on the surface corresponding to the line of the diaphragm."

As to climate and specifics, Dr. Thorowgood is unable to add to the very limited knowledge already possessed. The best practical rule appears to be that if the spasm be very pronounced a town air will probably suit best. He has found numerous exceptions to Schönbein's view that ozone acting as an irritant causes bronchial spasm. A young man among his own patients, severely affected with asthma, was always in great respiratory distress on the sea coast, but once fairly at sea he had no breath difficulty whatever, and finally pronounced himself cured after a voyage to Australia. Nitre paper fume he has found, on the whole, to be about the most useful of the inhalations. It is to the ammonia and carbonic acid

gas that some of the anti-spasmodic action of the burning paper may be attributed, for it has been shown by Trousseau and others that often ammonia vapour will cut short an attack of bronchial spasm, and to the writer's own knowledge an asthmatic sea captain was free from his breath trouble when conveying a cargo of guano, a product which slowly evolves ammonia. To the new remedy—iodide of ethyl—he is favourably disposed, believing it to be anti-congestive as well as anti-spasmodic; citrate of caffeine he once found efficient when all other means had failed. While one would have wished that the author had revised his proof-sheets, so as to save his literary credit from "like iodide of potassium so often does," and "usually soon gets speedily bad," &c., we feel sure that his careful and valuable work will be welcomed by all who desire to study, in a reasonable compass, the pathology and treatment of bronchial asthma.

EXTIRPATION OF THE UTERUS.

Dr. J. Marion Sims describes in the *N. Y. Med. Record* (June 21) an operation performed by Prof. Schroeder in a case of sarcoma of the uterus. The patient was nearly forty years old, and had a tumour about the size of an egg in the body of the uterus. A bit of it was scraped out with the curette, submitted to the microscope, and found to be malignant. Professor Schroeder determined to extirpate the organ. He made the incision as for ovariotomy; drew the uterus up from the pelvis; transfixed the cervix with a double ligature antero-posteriorly, just above the vaginal junction; tied one on each side, including the corresponding part of the broad ligament, just as Péan does; and then he amputated the body of the uterus from the cervix at the os internum. This left a raw surface about an inch and a half in diameter, which Péan and others have been in the habit of pulling outside through the lower angle of the abdominal incision, and fixing it there, as they did the pedicle in ovariotomy. The clamped pedicle and Listerism are antagonistic, if not incompatible. Prof. Schroeder did not wish to leave a sloughing pedicle outside, nor did he wish to leave a suppurating one inside the peritoneal cavity; and he hit upon this happy idea:—He exsected the cervix conically from the amputation surface down to the point at which it had been transfixed with the ligatures, and then he brought its thin edges together antero-posteriorly, and secured them with fine interrupted carbolised silk sutures. Thus the incised surfaces were brought into contact internally, leaving only serous surfaces in contact in the peritoneal cavity. It was beautiful in theory and successful in practice, for the patient recovered, with the pulse and temperature remaining very nearly normal all the time.

PART III.

HALF-YEARLY REPORTS.

REPORT ON PUBLIC HEALTH.[a]

By C. A. Cameron, M.D.; S.Sc.C., Cambridge; L.K.Q.C.P.I.; Fellow and Professor of Hygiene and Chemistry, Royal College of Surgeons in Ireland; Superintendent Medical Officer of Health for Dublin, &c., &c.

COLOUR BLINDNESS.

Sometime ago a commission was appointed in Glasgow to investigate the subject of colour blindness, and what we may term colour *obtuseness*, especially from a statistical standpoint. The commission consisted of Doctors Wolfe, Cumming, and Pickering, and the results of their inquiries have just been published in a pamphlet form. It appears that there are in Glasgow 3 persons in every 100 of the population who are "colour blind;" whilst $6\frac{1}{2}$ per cent. of the people recognise colours with difficulty. One in every ten persons is more or less insensible to colours. The test to which the persons examined were subjected consisted in causing them to look at a given portion of the prismatic spectrum, and, after naming its colour, to select from a bundle of worsted of mixed colours a thread of the same tint.

It is rather startling to learn that so large a proportion of the population (for it is not probable that the population of the United Kingdom differs in any important degree from that of Glasgow) are incapable of discriminating colours. By rail and by sea the safety of travellers depends in no small degree upon signals made with coloured lights. It is doubtful if sailors are ever examined in reference to their perception of colours; and the tests applied to railway officials in the United Kingdom are, as is well known, by no means as strict as they ought to be, or as they are in Continental States. We fear that collisions on both land and sea are not

[a] The author of this Report will be glad to receive any books, pamphlets, or paper, relating to hygiene, dietetics, &c. They may be forwarded through the agencies of this Journal.

uncommon in consequence of inability on the part of the "look-out" man to recognise colours.

At a meeting of the Medical Society of Lyons, held on the 9th December, 1878 (*Gazette Hebdomadaire*, February, 1879), Dr. H. Favre made a communication relative to the treatment of *Daltonism* by exercising the eye in a particular manner. He instanced a number of cases in which success had been obtained by the adoption of his system. In the discussion which followed, M. Gayet stated that there were two classes of persons deficient in the perception of colours—1st, those who were anatomically wanting in the necessary conditions to colour perception; and 2nd, those who were merely ignorant of colours. The latter may be compared with persons who fail to recognise the difference between a true and a false note in music. Now, as persons may be educated to discriminate between sounds, so the sense of sight may be cultivated so as to render the perception of colours more delicate—in fact, both ear and eye may be successfully cultivated. A great number of persons are not true Daltonians, but are merely ignorant of colours, and this fact accounts for the enormous percentage of so-called colour blind children which Favre found amongst the pupils of the Lyons schools. Favre believes that it is very difficult to discriminate between the two kinds of dyschromatropes. He inclines to the belief that amongst children, at least, there are few, if any, true Daltonians, and asserts that a methodical and continuous exercise is certain to develop the chromatic sense in every one.

It would be desirable that in the primary schools of these countries of railways and steamboats some education should be given in chromatoscopy to children. Perhaps Favre goes too far in asserting that the colour blind are always curable if treated whilst young, but still it is evident that many persons now colour blind might have been taught during childhood to distinguish colours.

La France Médicale states that M. Debœuf has proved that Daltonism may be cured by causing the colour blind to look through a solution of fuchsin. M. Javal has constructed spectacles in which a thin sheet of gelatine, coloured with fuchsin, is interposed between two thin pieces of glass. Daltonians regarding objects through these spectacles observe them in their true colours—so at least says *La France Médicale.*

VACCINATION IMPERFECT UNLESS THE VESICLES ATTAIN MATURITY.

At a meeting of the Epidemiological Society, June 4th, 1879, Dr. Corry read a paper on details of experiments on the vaccination and subsequent removal of supernumerary fingers, apparently showing the imperfect protection afforded by vaccination when the vesicles are removed before their full maturity. Four children were experimented upon; one had a supernumerary little finger, the others had each a supernumerary thumb. The thumbs having been vaccinated were amputated, one on the fourth day, another on the fifth day, and the third upon the sixth day after vaccination. The children were revaccinated from thirty-nine to fifty days after the primary operation. The child whose thumb had been cut off on the sixth day was found to be insusceptible to revaccination; but the other two children and the child whose finger had been removed were affected, but the vaccinia developed did not run the usual course of a primary affection. The course was very rapid, the areola being developed upon the sixth or seventh instead of the eighth or ninth day, and the scabs mostly dried completely on the twelfth day. It is known from Bryce's test that when revaccination is performed on the fifth day after the vaccination the vesicles which result from the second operation run so rapid a course as to overtake those produced by the first one, and both mature simultaneously. Dr. Corry shows that the same thing happens when revaccination is performed upon the seventh, eighth, and ninth days; but he found that it was not possible to effect revaccination upon the tenth day. Upon the ninth day the vaccine vesicles attain their maximal size, and the skin then undergoes that peculiar and unknown modification which renders it insusceptible to the vaccine virus. The experiments with the children encumbered with supernumerary digits proved that the removal of the vesicles before maturity allowed the children to remain susceptible to vaccine and, presumably, to variolous influences. Whatever tends, therefore, to prevent not only the perfect maturation of the vesicles, but also those conditions of the skin, such as eczema, which modify the appearance of the vesicles, operates in lessening the protective influence of the operation. The change in the system which is induced by vaccination is progressive from the first day of the operation, but it is imperfectly accomplished until the tenth day. Smallpox often appears from one to six or seven days after vacci-

nation, for at those dates the system is still susceptible to variolous poison. Slight vaccine scars may be taken, too, as the result of imperfectly matured vesicles, and as an indication that the system is imperfectly protected.

ARSENIC IN DARK COLOURS.

We were the first to point out that many colours on wall papers other than green contained arsenic (*Medical Press and Circular*, 1875). Since our paper appeared in print this poison has been found in pigments of the most varied hues. Dr. H. Fleck (*Chemiker Zeitung*, for May 8th, 1879) has directed attention to the presence of arsenic in dark water colours, and attributes the death of a mechanical draughtsman to the absorption of arsenic, in the following manner:—The deceased was in the habit of drawing pencils charged with colours through his lips for the purpose of pointing them. The colours were analysed. Indian ink, gamboge, carmine, blue, red iosin ink, and "neutral tint" were found free from arsenic; but sepia contained 3·08 per cent. and terra di sienna, 3·19 per cent. of arsenic. Vandyke brown, burnt sienna, bistre, bladder green, brown ochre, umber (raw and burnt), and Indian red were found to include more or less of arsenic. As most of these colours contain oxide of iron, it would appear that the oxide, either from insufficiency of quantity or from not being in a proper mechanical condition, did not act as an antidote to the arsenic. The analysis of the viscera, &c., of the deceased revealed the presence of arsenic in his liver, kidneys, lungs, heart, and brains; his stomach, however, contained only the merest trace of the poison, which, moreover, was wholly absent from the œsophagus. It would appear that the arsenic was absorbed in extremely minute quantities, and accumulated in the system until it assumed poisonous proportions.

It has recently been stated that dermatitis has been caused by the use of paper collars, the glaze on the surface of which contained arsenic.

Mr. Thomas Douglas suggests (*Chemical News*, Aug. 8, 1879) that a harmless and cheap green pigment might be prepared as follows:—Chromate of barium (lemon yellow) is treated with sulphuric acid, which reacts as follows—

$$BaCrO_4 + H_2SO_4 = BaSO_4 + H_2CrO_4.$$

38·7 per cent. of acid is required to effect this decomposition, but it is better to use only 20 per cent., so as to allow some undecomposed

chromate to remain. The mixture acquires a fine red colour (from chromic acid), and, when ground up and heated to redness, yields a fine green colour—chromium sesquioxide (Cr_2O_3).

Prussian blue and many of the vegetable yellows yield excellent greens, and so long as non-arsenical greens are procurable it would be certainly desirable to prohibit the employment of arsenical greens.

ESTIMATION OF NITROUS ACID IN POTABLE WATER.

The presence of much combined nitrogen in potable water is regarded as a serious impurity, even when the nitrogen compound is itself innocuous. There are five conditions in which nitrogen occurs in water—1st, as free nitrogen; 2nd, as albumin or allied substances; 3rd, as ammonia; 4th, as nitrous acid; 5th, as nitric acid. There is but one of these forms in which nitrogen is really a dangerous ingredient—namely, as albumin (or albuminoid bodies), chiefly because the nitrogenous substance might possibly include the germs of a contagious disease. The albuminous compounds undergo decomposition in process of time, and their nitrogen becomes ammonia, nitrous acid, and nitric acid, in succession. The reason why much ammonia or nitrogen acid is regarded with suspicion is obvious—it indicates that the water had a tainted source. Water contaminated with nitrogenous organic matter (of which house sewage is a common source) is often to a great extent purified by filtration through soils. The filtration effects the oxidation of the organic matter into water, carbonic acid, and the acids of nitrogen; but it is not always that such water is perfectly purified in this way from actual organic matter, for occasionally water which usually contained only the products of the oxidation of sewage is contaminated with the sewage itself. Besides, the fact that the organic matter in such waters, however minute in quantity it may be, is the residue of a larger quantity, which had most likely an animal origin, is a point against its use. These are the reasons which lead us to prefer a water free from ammonia and nitrites and nitrates to one with even less organic matter, but in which those compounds are largely present.

The determination of the amounts of ammonia and of albuminous matter in water is a process which, by the method of Wanklyn, Smith, and Chapman, requires but little time and trouble. The estimation of nitrous acid is a much more difficult and tedious process, and is not generally performed even by medical officers of health who make water analyses.

In *The Journal of the American Chemical Society* for June, 1879, Mr. Albert R. Leeds describes, at great length, the different methods of estimating nitrous acid in potable waters. In describing the colorimetrical determination of nitrous acid by the meta-diamido-benzol method suggested by P. Griess, and elaborated by C. Preusse and F. Tiemann, Mr. Leeds states that he was not able to procure in commerce that compound. He, however, prepared it by the reduction of dinitro-benzol, by means of tin and hydrochloric acid. Meta-diamido-benzol may be procured from Dr. Schuchardt, Görlitz, Silesia, Prussia, at a moderate cost.

Meta-diamido-benzol indicates the presence of one part of nitrous acid (or rather of its anhydride, N_2O_3) dissolved in 10,000,000 parts of water.

Preusse and Tiemann recommend[a] the following methods to be used:—

1. A solution of meta-diamido-benzol, containing 5 grammes per litre, is slightly acidulated with dilute sulphuric—1 : 3.

2. A solution of alkaline nitrite, of which 1 cubic centimetre contains 0·01 gramme of N_2O_3 is prepared. 0·0406 gramme of nitrite of silver is dissolved in hot water and decomposed by potassium or sodium chloride. After cooling, the solution is made up to one litre, the chloride of silver allowed to subside, and 100 cubic centimetres of the supernatant liquid diluted to one litre.

The rest of the operations are similar to those used in determining the amount of ammonia in water by means of Nessler's solution. For this purpose Nessler's tubes, which should hold about 100 c. c. of solution, may be employed, or Mill's colorimeter may be used. The principle of this process is exceedingly simple. Meta-diamido-benzol strikes an intense yellow colour with free nitrous acid. Therefore, when potable waters containing nitrites have their nitrous acid set free by the addition of sulphuric acid, the nitrous acid will give a yellow colour with the meta-diamido-benzol. This colour being compared with that produced by the reagent in a solution of nitrous acid of known strength, quantitative results are obtained. The process is an extremely elegant one, and such as might easily be employed by medical officers of health.

RATIONAL SYSTEM OF EXAMINING POTABLE WATER.

Dr. F. Holdefleiss has contributed a somewhat lengthy article to the July number of *Biedermann's Centralblatt*, entitled, "Con-

[a] Berichte der deutschen chemischen Gesellschaft zu Berlin. XI., 625.

tribution to the establishment of a Rational System of Examining Water as regards its influence upon the Health of Men and Animals." He concludes that a mere chemical analysis rarely suffices to determine the character of a water, or its fitness for drinking. He considers that microscopic examination, though much neglected, is a more satisfactory method, inasmuch as the presence of certain organisms has been found to bear a close relation to the sanitary value of water. For microscopic purposes only freshly-drawn water, and the deposit procured from the bottom and sides of wells, cisterns, tanks, &c., should be used; and it is the nature, not the numbers, of the organised bodies present which must be taken as the measure of the impurity present. These objects Dr. Holdefleiss distributes into three groups—(1.) Those that only live in good water, free from an appreciable amount of decomposing organic matter. These include *bacillaria*, *diatoms*, *spirogyra*, *cladophora*, and *desmidiæ*. The green thread-like algæ flourish in good water, but they die, as do the diatoms (the latter leaving silicious skeletons), so soon as the water becomes contaminated. (2.) Organisms which do not contain chlorophyll, and which, like common fungi, live upon decomposing organic matter. In foul water there are found *crenothrix polyspora*, *selenosporium*, *zooglœa*, *schizomycetes*, *bacteria*, *monads*, and *vibriones*. The presence of a colourless alga, *beggiatoa alba*, appears to be closely connected with the formation of sulphuretted hydrogen; it is found in bad well-waters. The *septomitus lacteus* resembles the *beggiatoa alba*, but it does not evolve sulphuretted hydrogen. (3.) This group includes organisms which live indifferently in good and bad water—such as, for example, the *oscillariæ*, *euglena viridis*, and the majority of the larger *infusoria*.

Waters exposed to air and light are good when they contain living green algæ and diatoms, with the contents of their shells coloured normally, but no colourless algæ, and few, if any, *schizomycetes*.

Water containing green algæ and living diatoms may be safely used by cattle, even if traces of ammonia and nitrous acid be present; but cattle should not be allowed to drink water in which beggiatoa alba is present, nor should fish be kept in ponds in which that alga abounds. Dr. Holdefleiss goes so far as to consider that the presence of beggiatoa and the schizomycetes in water is dangerous to those who do not drink the water containing them, as they may infect the atmosphere and propagate dangerous germs to the ground water and the underground air.

RESEARCHES ON THE NATURE OF MALARIA.

The Practitioner for August, 1879, gives a translation of a paper[a] on Malaria, published by Professor Klebs and Signor Tommasi-Crudeli. They consider that the true cause of malarial fever must be sought for in the soil, in which, when the proper conditions of moisture and heat are present, the poison is developed in large proportion. When the surface of a soil infected with malarial poison becomes dry, and the evaporation from the subsoil is active, the poison can ascend into the atmosphere. The substance which develops malaria is not equally abundant in soils of similar chemical composition and physical condition; hence the belief that it consists of a specific organism produced from a germ and propagated under certain favourable conditions of soil and air. These latter conditions are not, however, incompatible with the other theory that malaria is caused by certain gases produced in the soil. Messrs. Klebs and Tommasi-Crudeli have endeavoured to discover which of these theories is the true one. The method of procedure adopted was that which Klebs had already employed in similar researches. Firstly, the action of air, earth, and water of malarious places was tried upon living organisms; next the solid portion of the substances found to produce malarial infection was separated from the liquid portion, and the morbid influence of each investigated. These operations were performed in three ways:—1. The substance was placed under conditions which—assuming their existence—parasitic organisms producing malaria are most likely to be developed. For example, the soil was exposed to air at the temperature of 30° to 40° Cent. during the day, which ensured a rapid evaporation from the surface, whilst the deep layers were kept very moist. A minute quantity of infective material was obtained in this way, as also of material which had undergone no preparation. They were placed in various "cultivating fluids," and the morbid action of their first cultivation tested. It was sought to determine whether or not the products obtained by successively cultivating minute quantities of the first product in new cultivating solutions produced the same morbific action as the first product did, which proved to be the case. The next attempt was to ascertain the parts capable of organic development contained in the primitive infecting material

[a] Sulla Natura dell' Agente specifico che produce le Febbri da Malaria. Nota del Prof. Klebs e del Socio Tommasi-Crudeli, letta nella seduta del i giugno, 1879. Reale Accademia dei Lincei. Estratto dal Vol. III., serie 3a. Transeunti.

which could be considered as the cause of the morbid processes, since in the last crop of the series there was at most the merest trace of the substance capable of organic development existing in the primitive infective material. Lastly, the fluid part of the liquids was separated from the microscopical particles contained in it by filtration through plaster-of-Paris, in order that the action of the filtrate and of the residue could be separately determined—the two together having infective properties.

The morbific action of all these substances was tested by injecting them into the subcutaneous cellular tissue of rabbits, tracing a curve of their temperature during two hours, and making a *post mortem* examination of their carcasses.

The results of these observations were briefly as follows:—

1. The malarial poison is found in great quantity and widely distributed in the soil of malarious districts, and at times when it does not usually affect man.

2. The poison may be gathered in such times, in the strata of air in immediate contact with the soil. In order to collect it a powerful ventilator was used, by means of which 300 litres of air were gathered from these strata and driven with great force against a plate of glass coated with solution of gelatine, and contained in a small box.

3. Stagnant waters in malarial regions do not apparently contain malarious poison at the season during which malaria is not rife amongst men. Large quantities of water render the germs inactive.

4. The injection of liquids obtained directly from the soil into animals produced a fever with a regular typical course, the temperature rising from the normal one (in the rectum of rabbits 39·5° Cent.) to 41·8° Cent. The liquids produced by artificial culture and the solid matters separated therefrom by filtration produced the same kind of fever; but the *filtrate* from the liquids only produced a slight increase of temperature of an intermittent character. This fact appears to be the most important established by these interesting investigations, for we learn from it that the infecting substance is not a liquid or a gas, but a solid. The authors incline to the belief that this solid consists of a species of the genus *Bacillus*, which they propose to name "*Bacillus malariæ*." In the soil of malarious districts they occur numerously in the form of spores having independent powers of motion, and strongly refracting light. Their figure is elongated, and their maximal diameter is 0·95 micro-millimetre. They develop into long filaments which, at

first homogeneous, subsequently assume by transverse fusion a chain form, in the links of which new spores appear. The organism requires oxygen, and appears to belong to Pasteur's class of *Aerobii.* It does not develop in pure water, but multiplies rapidly in solution of nitrogenous substances—urine, and other animal fluids. In infected animals it is most numerous in the spleen and medulla of the bones. Salisbury, in 1866, considered that he had proved the virus of malarial fever to be a species of alga (*palmella*), but the harmless nature of that organism has since been demonstrated. He, however, was probably only in error in naming the malarial alga, for his opinion as to the vegetable nature of the malarial poison appears to be established by Klebs and Tommasi-Crudeli's investigations. Indeed the observations of Lanzi and Terrigi, referred to in one of our former Reports, and those of Cohn, agree as to the vegetable origin of malarial poison, though they may not be of accord as to its precise nature.

CAUSES OF DIARRHŒA.

Leicester has long been noted for its high mortality from diarrhœa; in the third quarter of last year it amounted to an annual rate of 8·7 per 1,000 persons living. Dr. William Johnston, Assistant Medical Officer of Health, in a paper published in the *Sanitary Record* for August, 1879, endeavours to account for this excessive prevalence of diarrhœa. He found that the amount of the disease was governed, during the period 1866–1878, by three meteorological conditions—namely, temperature, atmospheric humidity, and rainfall, placed here in the order of their importance. The most unfavourable combination of these conditions appears to be a high temperature, great atmospheric dryness, and little or no rain. The disease is least prevalent when the temperature is low—*i.e.*, from 57° F. to 58·5° F., the air highly saturated with moisture, and rain more or less continuous. Observations on the mortality from diarrhœa in Leicester, for a period of twelve years, lead Dr. Johnston to conclude that a mean temperature of 59° F., or higher, in conjunction with a scarcity of rain and low degrees of humidity, if continued for a week or ten days during any period between the twenty-fifth and thirty-seventh week, develops diarrhœa or increases it. A hot June always hastens its appearance. Leicester is built upon flat ground, and its sewers have not a good outfall. Dr. Johnston points out that towns similarly situated have, like Leicester, a high death-rate. Some of these towns are Liverpool,

Cambridge, Ipswich, Yarmouth, Leeds, Preston, Wigan, Northampton, Lincoln, St. Helen's, and Hull. On the other hand, towns built on high ground, with good outfall for their sewers, have low mortality bills—such, for example, are Plymouth, Bristol, Oldham, Chatham, Hastings, Southampton, Chelsea, Halifax, and Merthyr-Tydfil. In the sewers of the low-lying towns excremental matters have a tendency to linger until they become putrid. Dr. Johnston believes that the putrefying matters in the Leicester sewers evolve great quantities of organisms, which escape through defective traps and leaks into the atmosphere ; they also pass into the water in the ordinary traps, and from thence, by evaporation of the liquid, are carried up into the atmosphere. It is the bacteria and other organisms which are produced in this way that chiefly cause, according to Dr. Johnston, diarrhœa. In Leicester the water supply is stated to be very good, and not at all likely to be the vehicle of typhoid or diarrhœa virus. On examination of the houses in which deaths from diarrhœa occurred during the summer quarter of 1878, it was ascertained that 42 per cent. of them had water-closets, and 53·4 per cent. were provided with pails. In only 11, out of about 240 houses, were privies found ; 92 per cent. of the houses had large and open yards attached to them ; 7·1 per cent. had rather confined yards ; and only one had no yard. Dr. Johnston considers that the hygienic condition of these houses would compare favourably with that of most towns. With respect to the physique of the children, their dietaries, and their social relationships, there was nothing to account for the remarkable prevalence of diarrhœa amongst them. The amount of diarrhœal disease was not greater in the confined courts of the town, inhabited by the poorest sections of the population, than in the widest streets. Indeed "a somewhat remarkable fatality took place in some wide open streets, newly built, and situate upon the extreme margin of the town."

Dr. Johnston's observations, extending over a period of eighteen months, have led him to form the following conclusions:—

"1. The moist air in ill-ventilated and non-cleansing sewers, when the temperature of the latter is above 57° F., contains bacteria of the genera micrococcus and bacterium termo, the numbers present being in direct ratio to the increase of temperature from 57° to 69°·5 (the highest temperature observed).

"2. The same organisms are to be found in the confined air of cesspools, and here their numbers increase with the atmospheric temperature

"3. The trapping water of all gulley-grates and stench-traps, when connected with sewers of deposit, contains great numbers of both kinds of bacteria, derived in great measure from the air within.

"4. During hot weather, and especially when conjoined with great atmospheric dryness, these organisms are given off from all liquids containing them, and are carried into the air in very large numbers, by the ascensional force of evaporation. This fact can be easily demonstrated by covering any vessel containing a solution abounding in bacteria with a glass plate. The under-surface of the plate becomes covered with watery vapour, which can be collected into drops by the addition of ether, and a subsequent examination discloses the presence of bacteria. These bacteria, as has been before stated, are the active agents in causing putrefaction in putrescible liquids and substances of animal organic origin, and their appearance in the air of sewers and close cesspools is a sure indication that rapid putrefactive changes are going on in the excrementitious matters that may be retained in the former or collected in the latter.

"5. In badly sewered districts, milk will be found to be speedily infected with the above ferments; their presence may also be frequently recognised in the stale food of infants, if due care be employed in the collection.

"6. The juices that exude from and adhere to the over-ripe fruit exposed in shops or hawked about in such districts will be found, with few exceptions, to contain numbers of bacteria (rods and spherules) moving about amongst cells of the ordinary variety of fruit ferment.

"7. The atmosphere of these districts during hot summer weather, when filtered, is always found to yield fungal elements, ranging in character from micrococcus to mycelial filaments. I have never detected the presence of bacteria in the air of the same localities during any day in April or May.

"8. For the last two years the commencement of 'summer' diarrhœa in Leicester has been contemporaneous with the appearance, in large numbers, of bacteria in the air of some of its sewers."

AMENDMENT OF THE SALE OF FOOD AND DRUGS ACT.

This Act has come into force. It affects the Act which it amends in the following manner:—

1. It enacts that an inspector under the Act who purchases an article for the purpose of having it analysed is to be regarded as a person who has purchased the article for his own consumption. It had been held by some courts that an inspector was not "prejudiced"—to use the term employed in the Act—if he purchased an adulterated article and did not use it himself. The question is now satisfactorily settled.

2. Whiskey, rum, and brandy sold under 25° under proof, and gin under 35° under proof, are to be considered as adulterated unless the strength of the article is stated.

3. Seven days' notice of proceedings must be given in cases of prosecutions for the sale of an adulterated article.

4. In the case of perishable articles (milk, for example), proceedings must be instituted within twenty-eight days from the date of the purchase.

5. A cart in the street is to be regarded as a shop if used in the sale of food, drink, or drugs.

6. An inspector may be present at a private house or public institution, and when he has seen milk delivered thereat he may take a portion of it for the purpose of having it analysed. If found to be adulterated the vendor may be prosecuted by the inspector. The latter must, however, give a portion of the sample which he has taken to the vendor.

NATIONAL BOARD OF HEALTH, U.S.

A Board of Health for the United States has recently been established at Washington, and is likely to be of great utility in the promotion of the public health in the Great Republic. It issues a "National Board of Health Bulletin" weekly, and has been good enough to place us on the list of persons favoured with copies of the Bulletin. The number for August 2nd, 1879, contains a circular relative to disinfection and other precautionary measures to be taken in the event of an invasion of yellow fever; and as British seaports have ere this been threatened with invasion of that disease and others of exotic origin we republish the directions in full:—

"1. It is prudent to assume that the essential cause of yellow fever is what may for conciseness be called a 'germ,' that is, something which is capable of growth and propagation outside the living human body; that this germ flourishes especially in decaying organic matter or filth; and that disinfection must have reference both to the germ, and to that in or on which it flourishes.

"2. Disinfection, when used in a place not infected, for the purpose of rendering filth, or foul soils, waters, &c., incapable of propagating disease germs, is a poor substitute for cleanliness, and is mainly useful to make the process of cleansing odourless and harmless. The best disinfectants for this purpose are sulphate of iron, carbolic acid, fresh quick-lime, fresh charcoal powder, chloride of zinc, chloride of aluminium, and permanganate of potash.

"3. The two great difficulties in destroying the vitality of the germ of yellow fever are—first, to bring the disinfecting agent into actual contact with the germ; and, second, to avoid injuring or destroying other things which should be preserved.

"4. *When the germ of yellow fever is dry or partially dried no gaseous disinfectant can be relied on to destroy it.* It must either be moistened or subjected to a dry heat of not less than 250° F. to obtain security.

"5. In disinfecting or destroying infected clothing, bedding, or movable articles, *move them as little as possible while dry.* Before disturbing them have them thoroughly moistened either with a chemical disinfecting solution or with boiling water, in order to prevent the diffusion of dried germs in the air in the form of dust.

"6. The best method of disinfecting rooms, buildings, ships, &c., is still doubtful, owing to the difficulty of destroying the vitality of dried germs.

"The Board proposes to have this subject carefully investigated, and in the meantime advises thorough scrubbing and moist cleansing to be followed by the fumes of burning sulphur at the rate of 18 ounces per 1,000 cubic feet of space to be disinfected.

"The sulphur should be broken in small pieces, burned over vessels containing water or sand, which vessels should be distributed in the closed space to be disinfected at the rate of one to each 100 square feet of area of floor.

"7. No patented compound known to the Board is superior as a disinfectant to the agents above-mentioned, and none is so cheap. Some of these patent disinfectants are good deodorants, but *the removal of an unpleasant odour is no proof that true disinfection has been accomplished.*

"8. In districts where yellow fever prevailed last year the following precautionary measures should be taken:—

"(*a.*) Textile fabrics of every description which were exposed to yellow fever infection during the year 1878, and which have remained packed or boxed in a closed place since such exposure, should not be opened or unrolled, but should either be burned or placed in boiling water for half an hour or more, or in suitable heated ovens, or disinfected according to the nature and value of the individual article or articles.

"(*b.*) Every house and room in which cases of yellow fever occurred in the year 1878, and since that time have remained unoccupied, should not be opened for occupation until they have been thoroughly cleansed and disinfected by persons acclimated to yellow fever.

"(*c.*) Every privy, vault, underground water-cistern, dry well, or closed cellar connected with a house in which yellow fever existed last year, and which may not have been opened since that date, should not be reopened, but if possible should be covered with several feet of earth.

"(*d.*) Every suspicious case of sickness should be at once isolated, and every possible precaution taken to prevent infection by providing attendants who have had the disease, and thorough disinfection of all discharges from the sick. If the disease prove to be yellow fever all articles of clothing and bedding used about the sick should be burned, the house should be vacated, and every room tightly closed and fumigated with burning sulphur."

A NEW WINE.

A new sparkling wine has recently been introduced to the notice of the British public by that enterprising and gigantic firm, Messrs. W. and A. Gilbey. It is termed *brut Saumur*, and to some extent resembles the well-known sparkling Saumur wine which the Messrs. Gilbey were the first to introduce into these countries, and which is now to be found amongst the stocks of all the wine merchants.

Amongst the complex constituents of wine there are four of primary importance—namely, alcohol, ethers, sugar, and albuminoid matter. Undoubtedly the alcohol is the most important, but its effect upon the animal economy is considerably modified by the combined action of the ethers associated with it. It is certain that the intoxicating power of alcohol varies according to the nature of the liquid of which it forms a constituent. In the form of whiskey, brandy, gin, or rum, alcohol produces a greater intoxicating effect than when the same amount is consumed in the form of good wine. The ethers appear to control or modify the action of the alcohol, and probably without interfering with whatever beneficial effect the latter is capable of producing. On the other hand, the action of sugar does not appear to modify favourably the effect of the alcohol. Beverages which contain much saccharine matter, and but a moderate amount of alcohol, produce, when used in excess, the worst forms of intoxication. The drunkenness developed by sweet beer and cider is more repellent than that caused by wine or brandy, if the latter be of good quality. As for the albuminoid bodies in wines and fermented beverages, they contribute—but to a trifling extent—to the nutrition of the persons who drink the beverages which contain them.

It is objected to the use of the ordinary sparkling wines that they contain too much sugar—that they have a tendency to develop gouty and rheumatic ailments in those who frequently consume them. The ingredient of sparkling wines which produces this

undesirable action upon the animal economy is undoubtedly sugar. This substance is readily oxidised into acid compounds, and we know how injuriously such acids act upon persons with gouty and rheumatic tendencies. But even gouty persons are not always injuriously affected by sparkling wines, especially when the latter are not too sweet. Champagne is not infrequently prescribed for the sick and delicate; and, no doubt, the carbonic acid which is their characteristic feature serves to promote the digestion of the sparkling wines; it at least renders them very palatable to many persons who have no strong liking for ordinary wines.

Now, Champagne is a wine to which in the process of manufacture a certain quantity of a highly saccharine liquid (*liqueure*) is added; it is, therefore, to a certain extent, not a simple or purely natural wine, but rather an artificial compound. The new wine is, so far as we can learn, a species of Champagne in which the amount of added liqueure is very small. It is, in fact, a natural wine, the amount of saccharine matter added being apparently just sufficient to produce by its fermentation the carbonic acid gas which imparts to the wine its effervescent and piquant qualities. It is, therefore, a Champagne much more likely to prove beneficial to gouty or rheumatic persons than the ordinary sparkling wines. It is probable that it could safely be drank by diabetic patients. Sugar, though very digestible in childhood, becomes less so in mature and advanced age; and as we grow older our fondness for sweet things steadily decreases. Young people may enjoy the sweetest of wines; but in middle life the taste for "dry" wines preponderates, and from a natural physiological cause. We are pleased, therefore, to find a cheap, but sound, dry, sparkling wine, such as the *brut Saumur* now available; and we trust that it will soon supplant to a large extent the port and sherry wines of dubious quality which are at present in use in the hospitals of these countries. The wine has a more pleasant flavour than, and its alcoholic strength is fully up to, that of the ordinary Champagnes. Some persons may consider it rather too dry; but a short experience of its flavour will most probably be the means of causing them to avoid for the future the sweet sparkling wines, even that celebrated article which bears the brand of Cliquot.

The sweet flavour of the ordinary sparkling wines prevents them from being drank at dinner whilst the fish is being discussed, but this objection does not apply to *brut Saumur*, which is an excellent wine to drink with one's fish.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

PROCEEDINGS OF THE DUBLIN OBSTETRICAL SOCIETY.

FORTY-FIRST ANNUAL SESSION.

EDWARD B. SINCLAIR, M.D., President.
WILLIAM ROE, M.D., Honorary Secretary.

Saturday, June 7, 1879.

E. B. SINCLAIR, M.D., President, in the Chair.

Intra-uterine Tumours.

DR. KIDD laid on the table a number of fibrous tumours which had been removed from the uterus, and said that in again bringing this subject before the Society he meant to confine his observations to cases illustrating special points in the history and treatment of these tumours. The first case he would mention seemed to illustrate a family proclivity to the formation of fibrous tumours. In 1869 he brought before the Society a case in which he removed twenty-nine tumours from the interior of the uterus of a young woman by means of four distinct operations, performed within five or six months. In January, 1878, a sister of that girl was admitted into the Coombe Hospital, suffering from uterine hæmorrhage, with a considerably enlarged uterus. He explored the uterus, and found six tumours growing within it. He removed them by twisting off one and removing the others with an ecraseur. They varied in size from that of a hazel nut to a small orange. The elder sister of the girl was recently in the Coombe Hospital. It was now ten years since the operations were performed on her. Since that time she had attended to her business, and had been in America, where she was a shopwoman, and in Dublin had been a visiting governess. Her uterus was much larger than it was at the time of his previous acquaintance with her, but she had no hæmorrhage. She menstruated naturally, but not profusely. Once, after having been subjected to the use of the sound in another hospital, she

had profuse bleeding and an attack of subacute peritonitis, but that had all subsided, and she was again pursuing her avocations in Dublin as a visiting governess. That was the first case in which nitric acid was ever applied to the interior of the uterus. Whether or not they could attribute the cessation of the hæmorrhage to the use of the nitric acid he could not say.

The next case was one of interstitial uterine tumour, complicated with a semilunar contraction of the vagina. The woman was a nursetender. She came into the Coombe Hospital from Belfast. She stated that she was forty years of age, but looked considerably older, and was pale and anæmic. On examination, her lips and gums were found to be almost bloodless. When she was standing or walking, she said her feet and legs swelled. Her abdomen contained a hard tumour, deep in the hypogastrium, extending half way up to the umbilicus—tender on pressure on the right side, and movable. High up on the posterior wall of the vagina he found a semilunar contraction analogous to the annular contraction described by Dr. M'Clintock, who looked on it as an atrophic condition. The narrowing was in this case so great that the tip of the finger could scarcely pass through to touch the os. The body of the uterus was enlarged and anteflexed. The sound passed in four inches. When the sound was in the uterus it was found that the uterus could be straightened, so that the bulge of the anterior wall disappeared.

It would be recollected that on a previous occasion he stated that he had found that when one wall of the uterus was bulged out by the presence of a fibrous tumour, if they could pass the sound along the bulged-out wall they might safely infer that the tumour was intra-uterine growing from the opposite side of the uterus; but that if they failed to pass the sound along the bulged-out or convex side of the wall, and could pass it along the straight wall, it was probably an interstitial tumour. His subsequent experience confirmed that view. He, therefore, looked on the tumour in the present case as interstitial. The woman suffered much from diarrhœa; she had œdema of the extremities, and her health was altogether very bad. It would have been difficult to get at the os uteri, because of the semilunar contraction of the vagina, yet she was bleeding to death, and he thought it but right to give her the option of undergoing an operation and explain to her the risks of it. She declined any operation, and was treated with hypodermic injections of ergot, and for a time the hæmorrhage was checked, but only for one or two occasions. She left the hospital, and, he believed, was still alive, but was subject to considerable hæmorrhage. Lying on the next bed to that woman was another who had a large fibrous tumour reaching nearly to the umbilicus. The os uteri was dragged up high out of the pelvis, thrown forwards, and rested on the crest of the pubes. The tumour came down posteriorly and filled the concavity of the sacrum, pushing the os forward

on the body of the pubis. It was only by moving the finger round the pubis that he could reach the os. The hæmorrhage was not excessive, but yet interfered very much with her earning her livelihood as a general servant. He determined on slitting the os; and with great difficulty, by passing a tenaculum into it and dragging it down, the command of it was obtained. The os was then slit by means of Simpson's hysterotome, which checked the hæmorrhage. Ergot was tried, but had no effect beyond checking the hæmorrhage. The woman was again in her situation as a household servant. The next case was one of a sub-peritoneal tumour, which caused intense pain. He never saw any human being suffer so much pain as this woman went through. The tumour was of large size, and grew on the outer surface of the anterior wall of the uterus low down. It had pressed the body of the uterus up into the abdomen. There was on the right side of the abdomen a tumour nearly as large as a fœtal head, fibrous, and growing from the lower portion of the anterior wall of the uterus, rising up into the hypogastric region and into the right inguinal region, and pressing the bladder towards the left side, and also pressing the fundus of the uterus up into the abdomen. Near the umbilicus, which was movable, there was another body, and soft. At first he thought it was a separate tumour, but afterwards discovered that it was the fundus of the uterus, and into it the point of the sound passed. She said she had hæmorrhage, but, as far as he could learn, it never had been very great. She was exceedingly anæmic and greatly reduced. Her constant complaint was of paroxysms of pain. When they came on she would get out of bed and throw herself on the floor, and she would be bathed in sweat, and almost pulseless. Morphia had very little effect in relieving the pain. An injection of half or a whole grain hypodermically would procure relief for an hour or two, but was of no permanent use. She had persistent diarrhœa, which ran her down very much. It was evident that the only thing that could be done was to open the abdomen and cut the tumour out; but she was too low, and in view of the possibility that she would die on the operating table he did not attempt it. She left the hospital some time afterwards in a dying state. In connexion with that case he would show the two specimens before them of sub-peritoneal fibroid tumours—one large, and the other small. They were sent to him by his namesake, Dr. Kidd, who was now practising in Carlow. He found them in a woman seventy years of age, upon whom he made a *post mortem* examination. They were connected with the uterus, and, when he got them, had the uterine tissue upon them, though they were now dried up. They exemplified the calcareous degeneration which fibrous tumours, especially sub-peritoneal fibrous tumours, underwent.

Two years ago a woman was admitted into the Coombe Hospital from Limerick. She had a large uterine tumour, and was greatly run down

by hæmorrhage. On examination the conclusion was come to that it was interstitial, and he proceeded to remove it. He dilated the os with sea-tangle, got his finger on the tumour, and found that it was interstitial, and embedded in the wall of the uterus. In removing the sea-tangle from the uterus he pricked his thumb, and suffered very much for nearly a year afterwards. His arm swelled up, and for some days after the wound he had high fever. Since that accident he had made it a rule always before removing sea-tangle to have the uterus syringed out with Condy's fluid, and again after removing them, before proceeding to operate. He afterwards succeeded in detaching the tumour with Sims' enucleator, but it was so large that he could not get it out of the uterus, though it was quite free and he could twist it round. Ergot of rye was freely administered, with the hope it would be expelled by the uterine contractions. The woman died in three days afterwards, and there never was any attempt at the expulsion of the tumour. She was a married woman, who had never had children. The next case was an unmarried woman—a governess—who had never had children. She came to the hospital on the 5th of March, 1878. She had profuse hæmorrhage, by which she was very much run down, and when it ceased a copious discharge of serous fluid went on. On examination he found the uterus low down in the pelvis, and enlarged. It filled the concavity of the sacrum, and extended up to the hypogastrium. The uterus was not only large, but was very much retroverted. He introduced six sea-tangles, and succeeded in getting in fourteen the next day. He got his finger into the uterus, and, with the benefit of the assistance of the President, found a large tumour projecting into the cavity of the uterus, with a very broad base of attachment growing from the anterior wall of the uterus near the fundus, and projecting along the posterior wall, which it bulged out. The attachment was so broad that it was impossible to surround the tumour with the loop of the ecraseur, and he had to proceed to detach it with his finger. He ruptured the covering of the tumour with his finger, and then detached it with Sims' enucleator; with great difficulty he got it through the os and out of the uterus. It weighed $5\frac{1}{4}$ ounces, and was nearly five inches in length in its longest diameter. The patient made a perfect recovery, and was able to resume her professional work.

The tumour which he removed in the next case was contained in the bottle before them. He removed it within a few weeks from the uterus of a young unmarried lady. She had been suffering very much for some years from hæmorrhage and pressure of the tumour upon the bladder, which caused her great distress. She went to London about a year ago, and consulted one of the most eminent gynæcologists there. He dilated the uterus, made an incision in what he believed to be the capsule of the tumour, and gave ergot, but did not think it practicable to remove the tumour. He stated in a letter to him (Dr. Kidd) that he believed the

only thing for the patient was the performance of Battey's operation—namely, the removal of the healthy ovaries, in the hope that that would put a stop to menstruation, and check hæmorrhage, or the removal of the entire uterus. On examination he found that he could pass the sound along the bulged-out wall of the uterus, and came to the conclusion that it would be practicable to remove the tumour. Accordingly, he introduced sea-tangle, and on examination with his finger found that the tumour grew from the posterior wall of the uterus high up near the fundus, and that it was covered over with muscular fibre. With the assistance of Dr. Roe and Dr. Mason he detached part of the tumour with his finger and the rest with the enucleator, but, as in the previous case, he had great difficulty in getting it out through the os. The operation was performed on the 28th of May, and the patient had since made a good progress towards recovery, her pulse never having exceeded 84, and her temperature not having gone up.

On the 25th of January a patient from the county of Meath was admitted into the Coombe Hospital. She had previously come once or twice to his house, and on the last occasion was so blanched from hæmorrhage, weak, and exhausted, that he induced her to go to the hospital. On examining her he found a mass of tumours occupying the hypogastric and right iliac regions. One of them, on the right side, was the size of a hen's egg; another, in the centre, was rather smaller, and a third lay still deeper. All were movable in the abdomen, and in relation to each other, and were evidently sub-peritoneal. On passing his finger into the vagina he found a large hard tumour occupying the anterior half of the pelvis. It was movable, and had pushed the uterus forwards and upwards to the right side. It projected into the cavity of the pelvis and lay much lower down than the uterus itself. In fact it had pushed the uterus up into the abdomen. On passing the sound into the uterus he found that the small central tumour in the hypogastric region was really the fundus of the uterus pushed up. The cavity of the uterus was $4\frac{1}{2}$ inches in length. The diagnosis was that the case was one of sub-peritoneal tumours and a large intra-uterine tumour. The hæmorrhage was attributed to the latter, and was very great. They kept her for some time in hospital, and treated her with hypodermic injections of ergot. After a little the intra-uterine tumour began to come down. The os dilated so that he could pass his finger into it. He dilated the uterus by passing three pieces of prepared sponge into it, and, applying an ecraseur, divided the pedicle of the tumour without any great difficulty. They had considerable trouble in getting the tumour out. The patient made a rapid recovery and went home, and she had paid him a visit since. She menstruated naturally, and while the cavity of the uterus was still large all hæmorrhage had ceased.

He had one more case—namely of a lady from the North of Ireland,

who came to him with a letter from a medical man, saying that she had long suffered from hæmorrhage. On examination he found a very much enlarged uterus, running nearly as high as the umbilicus. She was very anæmic, and had a peculiar soft watery look. On examination with the sound he found the uterus bulged out anteriorly and a tumour growing from its posterior wall. The tumour was very convex, and he could move the sound freely round it. He tried with the sound to measure its size and to ascertain the exact position of its attachment, and in doing so he believed he lacerated the capsule of the tumour, for she had considerable hæmorrhage; and, after a few days, a portion of the tumour sloughed and was expelled. After a short time another portion of it was expelled, and finally he was able to grasp a third portion with a forceps and twist it out. The rest subsequently came away without further operation. It was remarkable that after the first slough came away the os closed, and action apparently ceased. After the second portion sloughed the os again closed. The lady had had a tedious convalescence, but she was progressing towards recovery. A considerable amount of inflammatory action and swelling round the uterus went on after the tumour came away. The uterus was now of normal size, and the menstruation very trifling.

After some pertinent observations from Drs. Atthill, Doyle, H. Kennedy, T. More Madden, and the President, Dr. Kidd replied, and the meeting adjourned.

CARBOLIC ACID IN MALARIAL DISEASE.

A STRONG plea for the value of carbolic acid in malarial disease is published from the pen of Dr. A. G. Tebault. He says:—As a prophylactic, carbolic acid given in grain doses, at intervals of three to six hours, has, in my hands, yielded comparatively far happier results, even in cases where unmistakable prodromata of malarial fever were actually present. In experiments instituted during the past seven years on my own person and others, feelings of lassitude, malaise, cutaneous torpors, disturbed sleep, furred tongue, nauseous taste, and anorexia, often gave way under this treatment within twenty-four hours; and a pulse hitherto jerking and irritable became calm and of the natural rhythm, while a soothingly pleasant sensation pervaded the system. No fever manifested itself in any of the cases; on the contrary, the person felt refreshed and buoyant. No other agent which I have employed has ever superseded carbolic acid as an apparent disinfector of the malarious taint within the system; and this, after anxious thought on the subject for years, is to my mind the first glimmer of light that may lead to the discovery of means to act directly on the poison of fever.—*Lon. Med. Record*, Aug. 15, 1879.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, M.D., F.K.Q.C.P.

Vital Statistics

Of Eight Large Towns in Ireland, for Four Weeks ending Saturday, August 9, 1879.

Towns	Population in 1871	Births Registered	Deaths Registered	Deaths from Zymotic Diseases							Annual Rate of Mortality per 1,000 Inhabitants
				Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhœa	
Dublin, -	314,666	727	608	16	11	22	1	2	21	13	25·1
Belfast, -	182,082	536	299	—	2	3	—	15	10	19	21·3
Cork, -	91,965	221	133	—	—	10	—	—	5	3	18·8
Limerick, -	44,209	113	73	—	—	1	—	1	1	3	21·5
Derry, -	30,884	73	34?	—	1	—	—	—	—	—	14·8 ?
Waterford, -	30,626	74	37	—	—	—	—	—	1	—	15·8
Galway, -	19,692	20	24	—	—	—	—	—	1	1	15·8
Sligo, -	17,285	30	20	—	—	—	—	1	—	—	15·0

Remarks.

Except in Dublin, where a high mortality for the season prevailed, the death-rate was moderate or very low. The return of deaths for the week ending August 2 in the Glendermot district, Londonderry, is incomplete. In London the mortality was at the rate of 17·9 per 1,000 of the population annually; in Edinburgh it was 16·5 per 1,000; and in Glasgow 16·3 per 1,000. Within the municipal boundary of Dublin the death-rate was 26·1 per 1,000 annually; and even omitting the deaths of persons admitted into public institutions from localities outside the registration district, the death-rate in that district was 24·3 per 1,000. Zymotics caused 113 deaths, against an average of 114·2 in the previous 10 years. Smallpox showed a decided decrease both in the number of patients and of deaths. At the close of the four weeks there were only 40 cases under treatment in the Dublin hospitals, compared with 73, 110, 102, 101, 135, 177, and 188 at the close of the seven preceding periods respectively. Of the 21 deaths referred to fever, 9 were ascribed to typhus, 10 to typhoid, and 2 to continued fever of undetermined type. Whooping-cough was again fatal in Belfast, and scarlatina showed an

increasing prevalence and fatality in Cork. But the most remarkable feature in the returns of deaths from zymotic affections is the singularly low mortality from diarrhœa, consequent on the continued cool wet weather so characteristic of the present season. The deaths from diarrhœa in the eight large Irish towns during the four weeks were 39, compared with 83, 34, and 48, in the corresponding period of 1878, 1877, and 1876, respectively. It is noteworthy that in 1877, when the mortality from diarrhœa was also very low, cool showery weather prevailed throughout July. The returns from 20 large English towns show that the deaths from diarrhœa in the four weeks were only 335, compared with 3,699 in the corresponding period of 1878, 1,184 in that of 1877, and 3,136 in that of 1876. The same cause which has produced this great saving of human life, so far as diarrhœa is concerned, keeps up the mortality from diseases of the respiratory organs. The deaths from this class of affections numbered 99 in Dublin, including 77 from bronchitis and 13 from pneumonia. The averages of the previous 10 years were—respiratory diseases generally, 57·0; bronchitis, 36·3; pneumonia, 11·6. It will be seen that the excess was chiefly in the deaths from bronchitis.

Meteorology.

Abstract of Observations made at Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of July, 1879.

Mean Height of Barometer,	29·779 inches.
Maximal Height of Barometer (on 23rd at 9 a.m.),	30·090 ,,
Minimal Height of Barometer (on 1st at 9 a.m.),	29·075 ,,
Mean Dry-bulb Temperature,	56·6°
Mean Wet-bulb Temperature,	53·8°
Mean Dew-point Temperature,	51·1°
Mean Elastic Force (Tension) of Aqueous Vapour,	·377 inch.
Mean Humidity,	82·0 per cent.
Highest Temperature in Shade (on 28th),	73·6°
Lowest Temperature in Shade (on 27th),	48·1°
Lowest Temperature on Grass (Radiation) (on 27th),	43·8°
Mean Amount of Cloud,	79·2 per cent.
Rainfall (on 24 days),	4·187 inches.
General Direction of Wind,	W. and N.W.

Remarks.

A very inclement month, characterised by overcast skies, low temperature, frequent rains and high winds. The mean temperature was 3·8° below the average for July in the previous 13 years. The sunless character of the month may be gathered from the fact that the mean amount of cloud was nearly 80 per cent., and that on only one day—the 28th—did the shade thermometer exceed 70° in Dublin, while on nine

days it did not reach even 60°. The nights also were for the most part cloudy, and so no very low temperatures were recorded; the lowest—48·1°—occurred on the 27th about 36 hours before the thermometer reached its greatest height. The changeable weather which prevailed almost throughout the month was caused by the very disturbed state of barometrical pressure over the N.W. of Europe, and specially over the United Kingdom. Atmospherical depressions were constantly crossing over area from S.W. to N.E., or from W. to E., and each of them brought dull broken weather. The month opened with a cyclone lying over the N. of Ireland. On the afternoon of the 2nd torrents of rain and hail fell in Dublin—a violent hailstorm at 1 30 p.m. being accompanied by vivid lightning and loud thunder. Hail again fell in Dublin at 12 30 p.m. of the 8th, when a westerly gale was blowing. On the 18th and 19th a wave of comparatively warm weather passed over the country, but up to that time the mean temperature had been persistently some 5° below the average. On the 20th a deep atmospherical depression crossed Ireland and England, causing dull rainy weather generally, and disastrous floods in some localities. The centre of this cyclone was near Holyhead at 8 a.m. of the 20th, and had reached the Helder—600 miles to the eastward—at the same hour on the 21st, the mean rate of progression being 25 miles per hour. It then remained stationary for 24 hours, subsequently moving slowly towards the Baltic Sea. Excessive downpours of rain occurred in connexion with this disturbance in the N.E. of Ireland and E. of England—for example, the rainfall of three days at Donaghadee was 2·09 inches; that of four days at Yarmouth was 3·47 inches. Warm weather set in suddenly on the 27th in England and on the 28th in Ireland, but the month closed with rain and low temperature attendant on a bourrasque which advanced over Ireland on the night of the 30th. It is noteworthy that the month was very fine and warm in the northern parts of Sweden. On the 24th the thermometer rose to 77° at Haparanda, which is within the Arctic circle. In Dublin the atmosphere was more or less foggy on the 12th, 17th, 18th, 23rd, and 31st.

GANGRENE OF THE LUNGS.

Filehne showed some time since that a ferment capable of dissolving the elastic tissue of the lungs is present in cases of pulmonary gangrene. In a short notice (*Sitzb. d. phys. med. Soc. zu Erlangen*, p. 52, 1878) he now confirms his former researches, and shows that at the end of a period of six months putrefaction does not destroy the elastic fibres of the pulmonary tissue, whereas an extract in glycerine of gangrenous sputum dissolves these fibres very rapidly.—*Rev. des Sci. Méd.*, Juillet.

PERISCOPE.

Edited by G. F. Duffey, M.D., F.K.Q.C.P.

LOCAL TEMPERATURES IN DISEASE.

Professor Pétér has for some time been studying, by a long series of researches, morbid local temperatures. In his first communication to the Academy of Medicine (*Bulletin de l'Académie de Médecine*, 2nd Series, Vol. VII., No. 8) he occupied himself exclusively with the temperature of the chest in cases of acute pleurisy, and variations of the temperature, according to certain fixed conditions. In his experiments, Dr. Pétér employs the ordinary medical thermometer, which he places successively in the same intercostal space of the diseased side and the healthy side, and then in the axilla of the healthy side. The following are the principal results obtained by this method:—First. Outside of the pleurisy the parietal temperature is always higher than the average temperature. The local excess of heat is from five-tenths of a degree to upwards of two degrees, and sometimes exceeds this figure. Second. The elevation of the temperature increases with the effusion—that is to say, the greatest elevation of local temperature corresponds to the period of secretory activity of the inflamed pleura. This hyperthermia amounts sometimes to from two and a half to three degrees. Third. The elevation of parietal temperature decreases in the statical period of the effusion—that is to say, when the level of the fluid remains stationary, or, in other words, when secretion is not going on. The temperature, however, still exceeds that of the second side by from half a degree to one and a half degrees. Fourth. Pleurisy not only raises the parietal temperature of the side on which it is seated, but it raises also that of the opposite side. The parietal temperature, however, of the diseased side is always higher than that of the healthy. Fifth. The parietal temperature drops gradually when the effusion is spontaneously absorbed, still remaining higher than that of the healthy side. This excess of heat lasts for some time, and should not be neglected. It explains, indeed, the possibility of relapse, since it indicates the persistence of the anatomical conditions which preside over the formation of the effusion. Sixth. In pleurisies without effusion, the local excess of heat is less than when there is effusion. The return to the normal temperature also occurs more rapidly. Seventh. The absolute elevation of the local temperature on the diseased side is more considerable than the absolute elevation of the axillary temperature. What, then, happens when thoracentesis is performed? Immediately the parietal temperature rises on the punctured side. If the effusion is

not reproduced the hyperthermia may still increase by some tenths of a degree; but this excess only lasts for some hours. Then the parietal temperature decreases, returns to the figure which it had before the puncture, continues to decrease, and finally returns to the normal figure. If the effusion is reproduced, to be again reabsorbed, the local temperature rises after the puncture during some days, then progressively decreases under the influence of medical treatment. If, on the contrary, a fresh puncture is rendered necessary, there results a local, and then a general hyperthermia, the temperature remains stationary with the effusion reproduced, and at each new puncture the same series of phenomena is produced. According to Dr. Pétér, the local hyperthermia consecutive to the puncture must be considered as a consequence of *hyperæmia à vacuo*. This quite mechanical hyperæmia is necessarily additional to phlegmastic hyperæmia. There are thus two congestions of blood in lieu of one, whence occurs augmentation of tension in the vessels of the still inflamed pleura; and whence also greater richness of the new fluids in leucocytes. Thus the possibility of a purulent transformation of the effusion is comprehensible in the cases where the puncture has been made in the highly febrile period of the pleurisy. The syncope, pulmonary congestion, albuminous expectoration, pain and oppression, which have been noted as the sequel of too sudden depletions of the pleura, are not less easily explicable. In a further paper on the local temperatures in pulmonary phthisis (*Bull. de l'Académie de Médecine*, 2nd Series, Vol. VII., No. 37), Dr. Pétér endeavours to demonstrate that so soon as the tubercles occur at any point, the local temperature rises there. Thus, in cases of pulmonary tuberculisation which are still dubious, when it is only by the aid of the most minute investigation that one perceives a slight difference of the tensility and the elasticity of the region, and a little dryness of the vesicular murmur, with respiratory emphasis, the thermometer already shows an elevation of temperature, which may extend from three-tenths of a degree to one degree. The average local temperature of the thoracic wall being in a healthy subject about 36 degrees centigrade, this temperature reaches, in the cases referred to, 36·2, 36·3, 36·5, 36·8 degrees. Moreover, this hyperthermia is in general proportioned to the intensity of the local morbid signs. If, for example, the temperature of 36·2 degrees is found outside of the chest where there can scarcely be observed a slight modification of the sound and rhythm of the respiration, there will also be found several tenths more outside where the respiratory roughness is very evident, the emphasis more marked, and the dulness more pronounced. Thus the thermometric method would permit the establishment of a diagnosis in cases where the most experienced practitioners would, up to the present time, have hesitated. Who does not know, for example, how much the symptoms of chlorosis resemble those of tuberculosis at the outset? Now, in

chlorosis the temperature of the upper intercostal spaces remains at about 36 degrees, and is in all cases equal on both sides for he same space; whilst in pulmonary tuberculisation, the temperature there is always superior to the average by several tenths of a degree to one degree, and the hyperthermia is unequal on one side compared with the other, as are the lesions. Moreover, the investigation of the local temperature of the superior intercostal spaces may serve to fix the diagnosis, in cases in which it is necessary to determine whether a dyspepsia with wasting is idiopathic or symptomatic of commencing tuberculisation. M. Pétér cites various interesting observations of cases in which the employment of this method has permitted him to arrive at the truth. It is especially the disparity in the local hyperthermia of the summits of the chest which constitutes an affirmatory sign of the existence of a local lesion. This disparity is indeed necessarily associated with the actually differing anatomical and physiological conditions of usually similar parts of the organism, the temperature of which ought to be normally equal, and to rise or fall simultaneously, and in parallel lines, if the thermic modifications arise from a general cause. On the other hand, if the figures are dissimilar or too homologous in identical spaces, it is because the conditions which generate heat are changed there; and, under the circumstances, they can hardly be so, except by the tuberculisation, which is almost always simultaneously developed at the same points of the summits of the lungs, without being habitually symmetrical there, either in the number, the depth, or the extent of the lesions. Dr. Pétér has investigated the influence of hæmoptyses on the local temperature. He has found that it rises at the moment of the bleeding; that it remains high while the bleeding lasts, and then drops as it passes off. The variations of local temperature may even extend to the general temperature. In *caseous pneumonia* the hyperthermia is yet more considerable than in ordinary tuberculosis. It may amount to 3 or even 4 degrees. Thus in all the phases of pulmonary tuberculisation, there is a local elevation of the temperature which cannot be conceived without a concomitant and generating hyperæmia. In the first phases of the disease, this hyperæmia would be, according to the expression of Dr. Pétér, "trophica-tuberculous," or tuberculising; necessary to the development of the tubercle, and circumscribed to the very points at which the tubercle is in course of germination. Later on, the hyperæmia would radiate from the tubercle formed at the intact points of the parenchyma, so as to engender there congestion, hæmorrhage, or inflammation. The practical and therapeutical conclusion to be deduced from this view is that it is important to modify and to prevent trophic hyperæmia, whilst it is only localised, from radiating and from disordering the distant parenchyma. That is the part which is played by revulsive treatment—Lister's counter-

irritating plasters, cupping points, cauterisation, &c. In these, as in his previous researches, Dr. Pétér employed only the ordinary clinical thermometer in daily use in hospitals. Dr. Decaisne, who analyses in the *Revue Médicale* the elaborate memoirs of Dr. Pétér, adds the personal researches of Dr. Vidal, of Hyères, which fully confirm the results of M. Pétér. He finds (*Bulletin de l'Académie*, Vol. VII., No. 38) that as soon as a nucleus of tubercles commences evolution, a corresponding augmentation of temperature may be observed on the local surface of the skin. This disappears with the inflammatory period, whether that has been cut short or has given place to the destructive period. Indeed, according to this author, the rise in temperature of the skin corresponds so well to the internal inflammation, that it is possible to exactly draw in the thermometer the outlines of a cavity when the peri-cavernous tubercles in their turn enter upon evolution. When the local temperature rises, the pulse is always quickened. This is especially seen in galloping consumption. According to M. Vidal, the rise in temperature seems to be caused, not so much by the bulk of blood which flows towards an organ, as by the difficulty which the blood finds in returning from the periphery to the centre of circulation. It would seem that whenever the arterial blood is obstructed in its circulation through the capillaries, heat is given out.—*Revue des Sciences Medicales*, No. 27, and *Lond. Med. Record*, Aug. 15, 1879.

PYROGALLIC ACID IN SOME FORMS OF SKIN DISEASES.

Writing to the *Boston Med. and Surg. Journal* from Vienna, Dr. Garland gives an account of the results he has observed there ensuing from the use of two substances of analogous chemical composition and action in the treatment of certain skin diseases—viz., chrysarobin and pyrogallic acid. Liebermann, of Berlin, has shown that chrysophanic acid and the derivative of Goa powder, although allied, are not identical substances, and he has called the latter chrysarobin. Having referred at length to the best modes of using chrysarobin, the writer states that—(1.) Isolated plaques on the body and extremities are better suited for the use of chrysarobin than all other forms of psoriasis. (2.) Psoriasis of the face or genitals should never be treated with chrysarobin, and the same may perhaps be said of psoriasis punctata, where the process is acute. (3.) As it is a remedy liable to give rise to most unpleasant symptoms, chrysarobin should be applied only under the personal supervision of the physician. As pyrogallic acid is chemically allied to chrysarobin, Dr. Jarisch, assistant in Hebra's wards, instituted a series of experiments to ascertain whether these substances worked analogously in their action upon the skin. The results attending these experiments have been more than satisfactory. Dr. Jarisch makes use of an ointment containing ten parts of pyrogallic acid and ninety parts of unguentum emolliens. For

psoriasis this salve is applied twice daily. The diseased spots must be vigorously washed with soap and water, to remove the thick layer of epidermis, or, if very abundant, it may be scraped away with the sharp spoon; then, with the tip of a small stiff brush, the salve is rubbed into the various plaques until it leaves a yellow colour. It has an objectionable feature in that it stains the epidermis brown wherever applied, and this discoloration remains during several weeks. The duration of treatment varies from ten days to three weeks or more—somewhat longer than with chrysarobin, but decidedly shorter than with the older methods. The advantages of pyrogallic acid may be summed up as follows:—(1.) When applied to the scalp the hair is unchanged, or the colour is only slightly darkened. (2.) It never causes inflammation around the psoriatic plaques to which it is applied, and therefore may be used upon the face without fear of œdema and conjunctivitis. (3.) Since the salve does not irritate the skin *in toto*, as chrysarobin does, it is a remedy which can be trusted to the patient's own hand. Pyrogallic acid has also been successfully experimented with in cases of lupus vulgaris. A salve containing ten per cent. of the acid is spread on cloth, closely applied to the diseased part, and renewed twice during the day. The lupus nodules soon take on a brownish-gray colour, become œdematous, and project somewhat above the level of the surrounding skin. After from five to six applications—that is, after two or three days—the spots of lupus are totally necrosed and fall out, and the salve may be discontinued. The bridges of healthy skin between the nodules have in the meantime become superficially cauterised, are reddened, swollen, and sensitive, and the epidermis is loosened. After removal of the acid the swelling subsides, the defects in the skin left by removal of the lupus nodules heal by granulation, the epidermis is renewed, and in no place has healthy tissue been destroyed; only wherever a lupus nodule has existed there remains a corresponding cicatrix. The action of the salve is entirely local and confined to the surface with which it comes in contact. During the first two days of treatment many patients complain of pain, but no method for curing lupus is free from this drawback. Pyrogallic acid alone destroys each spot of infiltration, leaves intervening healthy tissue intact, and causes inflammation only where it is applied. Thus far the results have been very gratifying; and Dr. Garland mentions that of twenty-four cases of lupus, many of which had been for a long time in the wards, nineteen were, after a few weeks' treatment with pyrogallic acid, so far relieved that they were discharged from the hospital. Several cases of epithelial carcinoma, under continued application of a twenty per cent. pyrogallic acid salve, have been cured, the new growth becoming necrosed in a few days. The epithelial cell, however, opposes more than ordinary resistance to the action of the acid, and it is doubtful if other than very superficial forms of epithelioma can be thus treated with success. The

action of pyrogallic acid on other cell infiltrations—such as lupus erythematosus, prominent cicatrices abounding in young connective-tissue, ulcerating gummata, &c.—has been favourable enough to warrant further experiments in this direction.

THE PHYSIOLOGY OF THE TURKISH BATH.

Dr. W. B. Fleming (*Journal of Anatomy and Physiology, Normal and Pathological*, July, 1879) has made a series of experiments upon himself in regard to the effect produced upon his body by immersion in hot dry air. The conclusions at which he arrived are as follows:—A very large quantity of material can be eliminated from the body in a comparatively short time by immersion in hot dry air, and, although the greater part of this is water, still solids are present in quantity sufficient to render this a valuable emunctory process. The temperature of the body and the pulse-rate are markedly raised. The respiration falls at first, but afterwards is less influenced than would be expected *primâ facie*. The urine is increased in density, and deprived of a large proportion of its chlorides, while, if anything, an increase in the amount of urea is produced. The principal effect upon arterial tension seems to be an increase produced by the greater rapidity of the heart's action combined with the dilated, and even gorged, condition of the capillary circulation. From these conclusions the following practical observations as to the use of the Turkish bath in medicine may be deduced. Its most important effect is the stimulation of the emunctory action of the skin. By this means the solid and fluid tissues, and especially the blood and skin, may be effectually washed by passing water through them from within outwards. Hence in practice one of the most essential requisites is copious drinking of water during the sweating. The elevation of the temperature, and more especially of the pulse-rate and blood-pressure, point to the necessity of caution in cases where the circulatory system is diseased. A prolonged use of the bath seems to produce more or less depression, as shown by the fall of the pulse and temperature after fifty-five minutes. It is probable that the time at which this occurs varies with individual idiosyncrasy. The great use of the bath seems to be the power it possesses of producing a free action of the skin in persons of sedentary habit, or suffering from disease interfering with fluid excretion, and by its means considerable elimination of morbid matter may also be brought about. It is also an efficient means, if resorted to sufficiently early, of relieving internal congestion on the same principle, and with much greater certainty than the usual diaphoretics; and, in rheumatoid affections, not only does it act in this way, but, by the relaxation of muscles, permits of passive movements, rubbing, &c. (shampooing), exercising a much greater influence than they would independently exert.—*Lond. Med. Record*, Aug. 15, 1879.

DEVELOPMENT OF CEREBRAL WHITE AND GRAY SUBSTANCE.

At the Société de Biologie M. Parrot has made public the result of his examination of the brains of ninety-six children who had died before the age of one year. Up to the end of intra-uterine life the white and gray substances of the cerebrum remain indistinguishable, but at birth the white substance appears just crowning the summit of the fissure of Rolando; it also is found in the thalamus opticus and in the peduncle. Beginning at this period of life, it steadily develops from below upwards, starting from the peduncle. At the age of three months the white substance of the occipital lobe is distinct; that of the anterior lobes is always later, especially on the left side, and the demarcation is only completed towards the end of the first year. Each cortical region of gray substance is developed *pari passu* with the subjacent white fasciculi. This evolution of the cerebrum is *en rapport* with that of the skull, in which the posterior fontanelles are the first to unite, and in which the right fronto-parietal sutures are more precocious than the left. These facts, taken in connexion with what is known of the localisation of functions, lead to the supposition that the more elevated the functions to which a part of the cerebrum responds, the more slow is its development.—*L'Union Médicale.*

S. W.

TREATMENT OF PSORIASIS.

In order to remove rapidly, in a few minutes, the crusts of psoriasis, Preismann (*Wien. med. Presse*, p. 514, 1879) rubs the affected parts with a solution of a drachm and a half of salicylic acid in four ounces of rectified spirit, by means of a pledget of lint or cotton-wool. A smooth, red, and shining surface is thus obtained, upon which medicinal substances, such as oil of cade, chrysophanic acid, &c., can be easily applied. This solution also possesses the advantage of cleaning the skin and rendering it more permeable; it also relieves the itching. It may be used for soothing the itching of prurigo.—*Rev. des Sci. Méd.*, Juillet.

OPHTHALMIC MIGRAINE.

Dr. Galezowski contributed to the June number of the *Archives Générales de Médecine* a paper on ophthalmic migraine, or, to use his own definition, "migraine which localises itself in the organ of sight." Many authors, English, French, and Italian, have mentioned the occurrence of ocular phenomena as occasional accompaniments of ordinary migraine, but Dr. Galezowski considers that in a certain number of cases these ocular phenomena constitute the whole symptomatology of the morbid state, and appear to depend on a special localisation of the neurosis in question. He has observed, hitherto, only four varieties of ophthalmic migraine—

(1) periodic hemiopia; (2) glittering scotoma; (3) amaurosis; (4) photophobia. Each of these varieties usually presents, in addition to the symptom from which it takes its name, either some more or less well marked symptoms of ordinary migraine, or else symptoms peculiar to ophthalmic migraine. There are, however, some cases in which there exists but one single symptom, without anything else whatever to suggest that the case is one of migraine. For instance, when a periodic hemiopia, or a central periodic scotoma persists, as it may do, for some time, the diagnosis becomes very difficult, and it is impossible to speak confidently as to the nature of the disease without a most attentive examination into the previous history and the general state of the patient's health. It will often be found in these cases that the ocular phenomena have been preceded by, and have apparently taken the place of, frequent attacks of ordinary migraine. When the periodic hemiopia or scotoma is frequently repeated, the case becomes disquieting, for all work requiring steady application becomes impossible. A great variety of circumstances may add to the difficulty of the diagnosis in cases of ophthalmic migraine, such as the following:—(1.) The patient had, not long before the eye-symptoms came on, received a blow on the head. (2.) One eye may be reduced to a stump, or the patient may be suffering from general staphyloma. (3.) The attack may be complicated by the almost simultaneous occurrence of hysterical amblyopia, and this, Dr. Galezowski says, is not very uncommon. Dr. Bonnal, of Nice, relates the case of a man aged forty, who had been subject, since he was thirteen years old, to periodical attacks (every three or four months) of strabismus and dimness of sight, accompanied by epileptiform symptoms without loss of consciousness. These attacks diminished very much in frequency and violence after he had taken service in the Hammam at Nice as a rubber.—*London Med. Record*, Aug. 15, 1879.

IODIDE OF POTASSIUM SPRAY IN ASTHMA.

Dr. Evard, of Orsennes, has obtained very satisfactory results, in a severe case of asthma, from the use of a spray of iodide of potassium. The patient, a man thirty years of age, had suffered for eight months from daily attacks of asthma, and had also been subject to chronic bronchitis for five years. At the time the treatment was begun he had three or four attacks a day, and was reduced to a pitiable condition. After assiduous use of the spray for eight days, the asthmatic attacks had almost entirely ceased. Eighteen months have elapsed since then, but the patient continues to use the spray, and the attacks have not recurred. The strength of the solution used was one to twenty. The periods of inhalation were short, but frequently repeated.—*Western Lancet.*

S. W.

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PART I.

ORIGINAL COMMUNICATIONS.

ART. IX.—*Some Observations on Acute Febrile Gastro-enteric Catarrh, and its Relation to Enteric Fever.* By THOMAS W. GRIMSHAW, M.A., M.D., F.K.Q.C.P.I.; Physician to, and Lecturer on Practice of Medicine in, Steevens' Hospital; Consulting Physician to Cork-street Fever Hospital; Registrar-General for Ireland.

A RECENT paper "On an Epidemic of Fever caused by Infected Milk,"[a] read before the Medical Society of the College of Physicians, and the discussion which followed thereon, together with the study of a lately-published work on Typhoid Fever in Melbourne,[b] have directed my special attention to the subject of the relations between acute febrile gastro-enteric catarrh and enteric fever. It may appear to some that gastric and gastro-enteric catarrh are such well-known diseases that it is almost trivial to discuss these affections. I had almost thought so myself; but when I heard a Health Officer of Dr. Cameron's position speak of fever of a "*typhoidal*" character, and heard an eminent obstetrical surgeon approve his phraseology, and state "that it was quite unimportant whether the fever that X [the dairyman whose milk was supposed to be the infecting medium] and his children had was typhus, typhoid, gastric, or enteric, or nondescript,"[c] I thought our Medical

[a] On an Epidemic of Fever caused by Infected Milk. By C. A. Cameron, M.D. Dublin Journal of Medical Science. Vol. LXVIII., p. 1. July, 1879.

[b] Typhoid Fever; its Causes and Extent in Melbourne. By William Thomson, F.R.C.S. Melbourne, Sydney, and Adelaide: George Robertson. 1878.

[c] Dublin Journal of Medical Science. Vol. LXVIII., p. 81. July, 1879.

Society was receding into the dark ages, and I remembered that similar terms had been used, and in a similarly loose way, at the antipodes not long ago. I have carefully considered the cases referred to by Dr. Cameron in his elaborate paper, and have come to the conclusion that a large number of them were, in all probability, gastro-enteric catarrh of a febrile type. My friend, Dr. J. W. Moore, seemed to think that the temperature range, with its evening exacerbations, was almost sufficient to solve the difficulty and mark the cases as enteric fever. Among these cases he had slow invasion of disease, furred tongue, constipation, increased temperature, with evening exacerbations, and such other symptoms as usually accompany *every* febrile state. Now, these are exactly the conditions which accompany acute febrile catarrh of the stomach and upper part of the small intestine.

This disease is quite common in Dublin, and I invariably meet with a considerable number of such cases in cold and damp seasons. During the progress of the debate on Dr. Cameron's paper, I had several such cases under my care, and I requested my clinical clerk to carefully record a few, from which I have selected the two following as typical examples:—

Case I.—W. P., aged nineteen, constable R.I.C.; first seen May 18, 1879; had felt out of health for previous three weeks; got suddenly worse on May 17, when he had a shivering fit. Admitted on the evening of the 18th of May, when he had headache, furred tongue (white), constipated bowels; no history of previous diarrhœa. Pulse, 114; temperature, 103·4°. There was no tenderness of the abdomen in *any* part, and no rash of any kind.

His range of temperature was as follows:—

	Morning. Deg.	Evening. Deg.
May 18	—	103·4
„ 19	102	101·4
„ 20	101·2	101·2
„ 21	100·4	101·8
„ 22	99	101·4
„ 23	99	100·2
„ 24	99·4	99·6
„ 25	98·4	98·5
„ 26	Normal.	

The treatment of this case consisted in the administration of six-grain doses of quinine every third hour, and mild purgatives to act on the bowels.

This patient, after a few weeks' absence, returned to hospital with a similar attack.

Case II.—R. W., aged nineteen, constable R.I.C.; first seen May 21st, 1879; stated he had not felt well for some time before admission, having had attacks of cold and sore throat. On the day before admission he had a rigor. On the evening of the 21st his symptoms were—Hot skin, quick pulse, furred tongue, temperature in axilla 102°, taches bleuâtres on abdomen. There was no abdominal tenderness or gurgling on pressure, no history of previous diarrhœa, and no rose spots.

His range of temperature was as follows:—

	Morning. Deg.	Evening. Deg.
May 21	—	102·8
„ 22	98·8	101·6
„ 23	99	101·3
„ 24	99	98·8
„ 25	98·6	98·6
„ 26	Normal.	

This case was treated in the same way as Case I.

These cases are, as I have stated, typical examples of ordinary gastro-enteric catarrh; they both occurred in Constabulary patients from the barrack in the Phœnix Park, where there were a number of similar cases at the same time, but no case of enteric fever. Moreover, there had not been any cases of enteric fever among the men stationed in the Park for a considerable time. Many cases of this disease are of a much more severe character, especially when the catarrhal inflammation extends to the large intestine, and is accompanied by diarrhœa. I am quite aware that this disease is fully described in many of our text-books, but latterly it seems to have been overlooked, and many such cases have been called "gastric fever," which term is so frequently used to mean *enteric fever* that it appears to me that the number of cases of enteric fever have been much exaggerated.

Mr. Thomson, in his work on Typhoid Fever in Melbourne, details a number of terms, including "gastric," "continued," and "muco-enteritis," used to denote fevers in Melbourne, and then writes—"It is unnecessary to state that no such varieties of fever exist in nature." For my part, I am of opinion that one variety—if not more—of "fever" does exist, having characters very similar to enteric fever, and which may fairly be termed "gastric fever," or "muco-enteritis." It does not appear that

such diseases have an origin identical with that of true enteric fever, and to ascribe them to such an origin is calculated to cast great discredit on sanitary science. I must, therefore, after a very considerable experience in dealing with fevers of many kinds, enter a protest against every case having a furred tongue, gastro-enteric irritation, and a febrile temperature, with evening exacerbations, being called enteric or typhoid fever. From the therapeutic standpoint it makes comparatively little difference whether the diagnosis is correct or not, as I have shown in the *Dublin Journal of Medical Science* for February, 1877, that it is essential to the safety of such patients that they should be all dealt with as if they were cases of true enteric fever.[a] It, of course, makes a difference in prognosis which view we adopt of the case, but even here it will not do to foretell a necessarily favourable result for a case of febrile gastro-enteric catarrh, as many are tedious, and may terminate in fatal marasmus. From a sanitary point of view the diagnosis is important, as a Health Officer may waste much time and follow many false clues if he mistakes a gastro-enteric catarrh for true enteric fever, and an error in the contrary direction may cause him to overlook serious dangers to health. Now, what are the grounds upon which to found a diagnosis of this rather indefinite febrile affection?

The fact of cases, having the clinical characters of febrile gastro-enteric catarrh, arising in places where enteric fever is not prevailing at the same time, and where no apparent causes for enteric fever exist, is strong presumptive evidence against such cases being enteric fever. The absence of rose-coloured spots, diarrhœa, ochreous bowel discharges, and localised tenderness in the right iliac region, are marked clinical distinctions between enteric fever and febrile catarrh of the gastro-intestinal mucous membrane. The well-known alkaline character of the bowel discharges in enteric fever is rarely, if ever, present in the latter affection. The disease generally occurs in cold and damp seasons, when it manifestly originates from those conditions which give rise to catarrhal affections of other mucous membranes. I cannot agree with writers who attribute the disease to the use of unwholesome food or drink. When gastro-intestinal irritation is set up by such a cause, if catarrh arises, it follows the toxic symptoms caused by the unwholesome food, and may be compared to the bronchial inflammation which follows in the inhalation

[a] On the Management of the Bowels in Enteric Fever. Dublin Journal of Medical Science. Vol. LXIII., p. 127. February, 1877.

of an irritant gas. Such inflammation would not, however, be usually called "bronchial catarrh."

I believe the reason why this affection has received so little attention (except in times of the prevalence of enteric fever) is, that it is seldom met with in the wards of clinical hospitals, and our out-patient departments are, unfortunately, too much neglected as fields for clinical study. Careful observation in private practice will soon discover many such cases; usually they are classed as "biliousness," and treated by some domestic remedy.

ART. X.—*On the Sanitary Arrangements of Dwellings.*[a] By JOHN H. CHAPMAN, Medical Officer of Health and Consulting Sanitary Officer of the Pembroke Township.

IT is a matter of great moment to each member of the community to have a thoroughly healthful residence, but the importance of the subject has not hitherto been sufficiently recognised.

The sanitary arrangements of dwelling-houses—even those recently erected and situate in the most fashionable localities, and therefore least likely to be suspected—are, as a rule, so defective, not merely in principle but in structure, as to be sources of great danger to the health of the occupants.

There are but few houses, indeed, which possess effectual arrangements for preventing the ingress of sewer-gas, yet no one can deny that respiration of air contaminated by sewer-gas is very prejudicial to health.

The usually positive assertions of house-owners, or other interested persons, to the effect that the sanitary arrangements of a house are *perfect*, ought not to be implicitly relied upon as accurate. I do not mean to imply that such persons are to be suspected of wilful deception, but I assert (speaking generally) that they are ignorant as to the scientific sanitary requirements of houses. It therefore behoves every person to be sceptical of such assurances and to test their accuracy.

Rat-holes are sure indications of imperfection, but there may be serious faults without any such apparent "tell-tales."

Persons who do not detect "bad smells," or who have for a considerable time escaped illness, are too prone to think their

[a] Read before the Public Health Section of the British Medical Association at Cork, August, 1879.

houses perfect, and to resent any insinuation to the contrary as a personal insult.

"Any premises in such a state as to be injurious to health" are defined by the 107th section of "The Public Health (Ireland) Act, 1878," to be a *nuisance.* The 110th section of that Act provides that "where the nuisance arises from the want, or defective construction, of any structural convenience," notice to abate it shall be served on the "owner." The owner is described as the person receiving the "rack-rent," and rack-rent is defined as "rent which is not less than two-thirds of the full net annual value of the property."

It would thus appear that in the great majority of instances the expense of providing effectual means against anything which is injurious to health, and which arises from the want or defective construction of a structural convenience, is to be borne by the owner of the property—the proceedings being instituted in strict accordance with the terms of the Public Health Act.

Sewers and house-drains are necessary evils; they are essential for carrying off liquid slops from houses. Doubtless the "pail-and-tub system" in operation in some cities and towns is the most satisfactory known method for the removal of solid refuse, but it is obviously impracticable for that of liquids to any great extent.

Upon the relative merits of the earth and water-closet systems I shall not enter. I propose to deal only with the state of things which almost universally exists, and to show how, by adoption of the system now generally in vogue, the sanitary arrangements of houses can be made satisfactory without incurring the far greater expense which would necessarily be attendant upon a complete change of system; and I shall confine my remarks chiefly to the subject of construction and ventilation of house-drains, and disconnexion of the necessary communications between them and the houses at every point, so that the admission of sewage-gas may be effectually prevented.

(1.) A house-drain should be constructed of perfect earthenware flanged pipes, glazed on the inner side, and of at least six inches in diameter, all the joints of which should be thoroughly staunched with cement—the pipes being properly laid, and so as to ensure a sufficient and equable fall from the house to the main sewer.

(2.) The house-drain should be disconnected from the public main-sewer by an intercepting ventilating-trap—such as Buchan's,

Potts', the "Edinburgh," or some other equally effectual trap similar in purpose.

(3.) As the soil-pipe from a water-closet should be directly connected with the house-drain, danger to health from such direct connexion should be obviated by having an ordinary syphon-trap at the head of the soil-pipe, and also by the continuation upwards—*full bore*—of the soil-pipe itself, from a point external to the above-mentioned trap. This ventilator should be carried upwards, as vertically as possible, to at least a few feet above the highest eaves, or parapet, of the house. There should be no trap at the junction between the soil-pipe and the drain, and the soil-pipe ventilator should not terminate below the level of the top of any window, nor within at least a few feet of it.

(4.) Under no circumstances whatever should a soil-pipe from a water-closet be permitted to be placed inside a house; it should be altogether outside, and should be of at least four inches in calibre. Soil-pipes are usually made of metal or lead pipes; but as these are liable to become imperfect by the formation of holes in them which would permit the escape of drain-gas, they should be examined from time to time. Fire-clay socketed pipes, glazed on the inner side, such as used for house-drains (but not necessarily so large), would be less liable to become defective, and therefore should preferably be used wherever practicable. The joints of soil-pipes should be perfectly staunched—earthenware pipes with cement, metal pipes with *lead* putty (not oil putty), and lead pipes with solder.

(5.) The down-pipes conveying rain from the roof, the scullery waste-pipe, and the waste-pipes from housemaids' sinks, butlers' troughs, baths, lavatories, &c., as well as all overflow-pipes of cisterns, should be disconnected from the house-drains or soil-pipes, and be made to discharge over well-trapped gratings conveniently situated *outside the house*. If concealment of such traps be desired, it can easily be effected by covering them with hinged or removable gratings set at the ground level. The trap devised by Mr. Kenny (of the firm of Messrs. Maguire & Son) is admirably adapted for this purpose. All the above-mentioned waste-pipes should be provided with syphon-traps having arrangements for examination and cleaning; these are usually placed inside the house at the upper part of the pipes.

(6.) Well-trapped gratings connected with the drains should be placed outside the house wherever necessary to carry off surface water from yards, areas, &c.; but there should be no grating,

whether trapped or otherwise, which is in communication with the drains, placed inside a house.

(7.) Latrines (if tolerated at all) should be placed at a considerable distance from a house or "well," and should be cleaned out frequently. Water-closets, if properly constructed and ventilated, are far safer, notwithstanding the denunciation of them now so prevalent. Water-closets should be placed *outside* rather than inside the house; those inside should be provided with ample means of ventilation through a window, which should always be kept open, and the door should fit closely in its frame and constantly be kept *closely* shut.

(8.) The contents of rain-water or other large tanks are especially liable to become foul; they should therefore be run off and the tanks be thoroughly cleansed at short intervals of time. Where such tanks are not required they should be removed, or if convenient and available, they might be utilised as a means of flushing the drains; but for this purpose they should be large and should be provided with a large outlet (of at least four inches diameter), which should be carefully fitted with a plug.

In the exhibition of sanitary appliances may be seen a very satisfactory and cheap flushing cistern, exhibited by Messrs. Fletcher and Phillipson, of Lower Baggot-street, Dublin, which is stated to be capable of discharging forty gallons of water in about half a minute.

It is absurd to think that a six-inch drain-pipe can be "*flushed*" through a one-inch aperture, yet such appears to be the common idea. Such a mere dribble is but a useless waste of water, even though a considerable quantity be allowed to run off.

The public main-sewers are usually placed in the streets in front of the houses, whilst water-closets, baths, lavatories, sinks, &c., are generally situate at the back. In detached, or semi-detached, houses, under such circumstances, the house-drains should be laid altogether outside the house. In other houses—such as those in long ranges in streets—it is unavoidable to have the house-drains under the house; but in such cases it is especially essential that the drains should be perfect throughout in every detail, or rat-burrows will sooner or later provide means for escape of sewer-gas directly into the house, and once such a channel is made the higher temperature of the house will act as a suction-power and draw in the noxious gas. Whenever, therefore, rat-holes are discovered, they should be traced along their entire course down to the house-drain, which should then be made perfect.

Let us hope that in future, when new streets or roads are being made, the authorities will construct the public sewers at the rear, or else the sanitary accommodations may be placed in front of the houses.

The system of house-drain ventilation which I advocate is practically but a modification of the old open-drain system of early days—the dangers of which, however, are obviated.

As sewer-gas cannot be securely pent up in the sewers, the chief object to be attained is that it cannot enter our houses. If the public sewers be sufficiently ventilated—as they should be along their entire course at short distances apart—an intercepting ventilating-trap (such as I have already mentioned) will effectually obstruct the admission of sewer-gases into the house-drains, whilst the means of ventilation of such traps will allow air freely to enter the house-drains. This provision, while having the advantage of permitting inspection as to the effectiveness of the drains, would also allow removal of any obstruction which might possibly occur at that point—by far the most likely one for it to occur.

There is no danger of such traps becoming untrapped in an occupied house, and it is erroneous to think that they would allow gases to escape from the public sewers if the latter be properly ventilated. Objection has, however, been made to them on that supposition by some people, who do not object to the street gulley-traps usually placed beside the kerbstone of our public footpaths for the purpose of carrying off rain-fall water from the street surface; yet the latter frequently become untrapped during long periods of dry weather, as almost every observing person gifted with the sense of smell can testify.

It will be observed that the system of house-drains which I have above attempted to describe is simply a continuous and *un*interrupted tube open at both ends—viz., at or near to the position of the intercepting ventilating-trap, and at the top of the soil-pipe ventilating-shaft, terminating above the highest eaves, or parapet. All the waste-pipes, rain-pipes, and overflow-pipes being disconnected (outside the house) from the drains, no gases can possibly enter the house by them; and as the discharges from such pipes will enter the drains only through traps, no escape of drain-gas is likely to occur at these points. I use the term "drain-gas" in contradistinction to "sewer-gas," for the intercepting ventilating-trap will, as effectually as possible, prevent the return of sewer-gas into the house-drains, and by it I mean the exhalations from house-

refuse; but as its passage through efficient drains can occupy, at most, but a few minutes' time, such exhalations must be regarded as comparatively innocuous.

The highly dangerous gas from the public main-sewer being intercepted by the trap already referred to, can hardly enter the house-drain at all; however, should it pass the barrier, it would almost certainly escape at the ventilator; any of it which might find its way into the house-drain would be considerably diluted by admixture with air. Nevertheless, in order to be perfectly secure against the possibility of danger, I would recommend the completion of the simple and effectual system which I have attempted to describe.

There are other important matters connected with house sanitation which I shall briefly refer to—viz.:

(9.) Water for drinking should never be taken from a cistern. Pump-water from wells situate near to house-drains, stables, cesspools, latrines, or ashpits, is not safe for drinking. Where drinking-water can be obtained only from wells, great care should be taken to prevent the possibility of their pollution. If the water-supply be provided by public water-works, that for drinking purposes should be taken *direct from the pipes*, and not from a cistern.

(10.) Dustbins or ashpits should be placed at a considerable distance from a house, and not near to a "well" from which the water is used for drinking. Neither liquids nor animal or vegetable matters, nor other refuse liable to decomposition, should be placed in such receptacles.

(11.) The basement of every house should be well above the level of the ground, and should be concreted or asphalted to a sufficient depth, space being left between this and the joists upon which the flooring-boards are placed, with inlet and outlet to admit of ventilation under the floors.

(12.) All windows should be made to open to the full extent at top and bottom.

(13.) The walls of all apartments, and especially those used as bedrooms or nurseries, should be papered with smooth paper.

(14.) Every room should be at all times thoroughly ventilated, and especially so during the hours they are occupied. It is not essential that there should be a "draft," but sufficient means of ingress for fresh air, and of egress for hot and vitiated air, should be provided. The practice which is so common of sitting in rooms

overheated by gas-lights, with doors closed and windows fastened and barricaded, is highly to be deprecated as detrimental to health. The time at my disposal would not admit of my entering upon the details of the most approved methods of ventilation of rooms; however, there is no great difficulty in providing sufficient ventilation if only the hot and vitiated air be allowed to escape at the top of the room.

In conclusion, I would observe that the system of house-drains and their ventilation which I have brought under your notice, is that which was adopted and recommended by Mr. George C. Henderson, Architect and C.E., of Dublin (who, in conjunction with me, examined many houses), and by myself. Neither he nor I, however, claim credit for originating either the system, as a whole, or any of its details.

In the exhibition of sanitary appliances attached to this meeting may be seen models of the system, and also of the several details connected with it, which have been made by Messrs. Maguire & Son, of Dawson-street, Dublin, contractors for sanitary improvements—an examination of which is invited. Mr. Maguire will show you intercepting ventilating-traps, syphon and other traps of all kinds, for every purpose bearing upon household sanitary arrangements, the mode of ventilating soil-pipes, and the methods for disconnecting waste and rain pipes from house-drains. He has also a model to show the danger of discharging two or more water-closets, &c., through syphon-traps into one soil-pipe without ventilation, whereby discharge through one untraps the other. An inspection of these and the many other sanitary appliances exhibited will, I feel confident, afford gratification to all interested in the subject of household sanitary reform.

PROTOXIDE OF NITROGEN AS AN ANÆSTHETIC.

M. Bert, in removing a tumour of the breast, has again employed protoxide of nitrogen under pressure. The operation lasted fourteen minutes, and the patient experienced no accident. As the administration, according to M. Bert's method, is difficult, it is proposed to give it at first under the atmospheric pressure, and then, to profit by the anæsthesia it causes, to give chloroform. In this way the excitement the first inhalations of chloroform cause may be avoided.—*L'Union Médicale.*

S. W.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Essays in Ophthalmology. By GEORGE E. WALKER, F.R.C.S.; Surgeon to St. Paul's Eye and Ear Hospital, the School for the Indigent Blind, and the Hospital for Diseases of the Skin, Liverpool. London: J. & A. Churchill. 1879. Crown 8vo. Pp. 239.

THE Essays contained in this book are five in number. The first is on Glaucoma, and treats of a new theory of the disease invented by the author, and of his method of cure. Mr. G. E. Walker says he never did like iridectomy, "on account of there being no reasonable explanation of its action." We are obliged, however, to employ in medicine many remedies of which we do not know the *modus operandi;* and most oculists feel grateful that in iridectomy they have so satisfactory a method against glaucoma, whilst still striving to ascertain how it acts. "Future generations," Mr. G. E. Walker says, "physiologists as well as ophthalmologists, will surely stand appalled at the way in which the iris has been cut about in the last quarter of a century. The iris has been treated like the blood used to be before the late reaction against bleeding. To use the phrase of an eminent living physiologist, 'The blood was looked upon as a noxious fluid to be got rid of, the quicker the better.' So the iris has been cut about for everything." This passage is a sample of Mr. G. E. Walker's English. Verily, he treats his mother tongue no better than he thinks the iris has been treated. The author says a reaction against iridectomy has recently set in. This is a misrepresentation—iridectomy, for glaucoma, holding now as high a place in the estimation of ophthalmologists as ever. Nevertheless, as their science is progressive, other methods still better may be discovered; and already for some forms of glaucoma, as we are inclined to believe, a better method exists. In speaking of sclerotomy the author says:—

"Two operations have been introduced for the cure of glaucoma—one, called sclerotomy, which is simply the incision for iridectomy without

the excision of the iris, is, fortunately, an operation of so transparently honest a character that it has already had its day, although only a bantling of some few months. The objections to it are so obvious, theoretically, and have been so fully borne out in practice, that surely only the name of its inventor saved it from being still-born. The objections to it are, first, that the iris is almost sure to prolapse; and, second, that a more favourable wound for the causation of sympathetic inflammation could scarcely be designed."

Now, what is meant by an honest operation? And why should an honest operation be a short-lived one? The objections to sclerotomy, however, which Mr. G. E. Walker puts forward show that he knows nothing whatever about the performance of the operation, inasmuch as the iris does not prolapse when the proper precautions are taken, and the case is a suitable one; nor is the seat of the operation in the least a dangerous one, for it is the corneo-sclerotic margin, the field of many other operations. At page 11 the author says:—

"The old theory, scouted by the dying Von Graefe, of iridectomy being an efficient paracentesis, has recently been revived under another name. The operation is said to produce a cicatrix of filtration—that is, the scar resulting from the union of the wound is more permeable to fluid than the normal tissue. If this be the case, then, of course, iridectomy proper—*i.e.*, the excision of the iris, is useless, and the incision in the sclerotic only serviceable. But if the cicatrix be more permeable than normal tissues, it differs from cicatrices in other parts of the body. Take the cicatrix of a burn. Is it not notorious that this remains dry when the sound skin adjacent is bathed in sweat?"

Did it not occur to the learned author that the reason why a cicatrix of the skin from a burn remains dry might be that the sweat glands and ducts are destroyed? Also, that there might perhaps be some essential difference between the structure of a cicatrix in a purely connective tissue organ, such as the cornea or sclerotic, and a complex organ, such as the skin? These and other considerations make us fail to see the analogy he draws between a cicatrix of the skin and one in the corneo-sclerotic margin. Mr. G. E. Walker delights in putting any unhappy readers he may have in possession of the process of his mind by which he has gradually been led to give up iridectomy for glaucoma, and to invent a new theory of this disease. This mental process is as dreary as its results are startling. It must, however, be pleasant to sit in one's arm-chair and discover the solution of

burning questions such as this, while Hensen and Völckers, Leber, Exner, v. Hippel and Grünhagen, Hermann Pagenstecher, Adolph Weber, Max Knies, and Brailey, are vainly toiling over their microscopes or in their laboratories. Indeed the fact that the word "microscope" does not occur in the book makes us suspect that the author has but a poor opinion of that aid to pathological research.

With regard to the theory of glaucoma the author says (p. 60):—

"In thinking out the result of my first operation, I reasoned thus:—Here a perfectly typical case of acute simple glaucoma is aggravated by atropine, and cured by simple section of the ciliary muscle. Now, the obvious and immediate effect of section of a muscle is to produce temporary paralysis of it; conversely, if by producing temporary paralysis of the ciliary muscle one can cure glaucoma, it seems to follow, logically, that excessive use of the ciliary muscle may, and does, produce glaucoma."

And at page 63:—

"I believe what takes place in glaucoma is as follows:—The long-continued over-action of the ciliary muscle begets in it an irritable state, which only wants some provocation to develop an active inflammation."

Microscopical observers have not found any inflammatory appearances of the ciliary body in glaucomatous eyeballs, but Mr. G. E. Walker "holds" and "believes" otherwise, and "takes his ground with the greatest confidence." In order to connect this inflammation with the increased tension, Mr. G. E. Walker adopts Schwalbe's theory of the anterior chamber being a lymph space, with the interspaces of the ligamentum pectinatum, and the canal of Schlemm as the way of exit of the lymph. At page 70 he says:—

"Now, if it be true that the aqueous humour, when it has done its work, escapes through these passages into Schlemm's canal, we have only to suppose that through the inflammation of the ciliary body, whether it be slow or quick, these discharge-pipes are obstructed, and we can understand how increased tension takes place."

We have only to suppose a bit of the moon stuck in these discharge-pipes, and the same result will be brought about. In these days we expect discoverers (save the mark!) in the field of glaucoma to give us ocular demonstration of their discoveries, or at least to say they have seen them themselves. Even so vivid an imagination as that of Mr. G. E. Walker will not avail. Moreover,

it is by no means certain that Schwalbe's investigations are correct. They have been confirmed by Waldeyer, but the investigations of Leber, Iwanoff, and Rollett have had a different result. One of the most amusing things in the book is the audacity with which the author quotes (p. 75) Dr. Brailey's researches to suit his purpose. Dr. Brailey has found atrophy of the ciliary body, in particular of the circular fibres, to be one of the most constant changes in glaucoma. Atrophy, says Mr. G. E. Walker, is the most usual result of inflammation; therefore, because atrophy of the ciliary muscle is present, inflammation of it must have gone before.

The operation which Mr. G. E. Walker performs and recommends for glaucoma is hyposcleral cyclotomy—a modification of Hancock's operation. The following is his description of it (page 96):—

"Fix the eye by holding the conjunctiva below with toothed forceps; with the narrowest knife possible pierce the cornea, at a point opposite that of fixation, about a line from the sclero-corneal junction. As soon as the point enters the anterior chamber, alter the direction of the knife, so as to clear the edge of the lens, thrusting it through the iris for about a line; then, drawing back the knife, cut the tissues up to the sclerotic. Unless this be done with a heavy hand, there is no danger of cutting the sclerotic. The operation is facilitated by the previous exhibition of eserine; and in cases of recent onset, especially in young subjects, the sensation of the giving way of the ciliary muscle is communicated to the hand most unmistakably."

His explanation of the action of this proceeding is as follows (page 27):—

"If the theory be correct that the cure of the faulty process consists in the enforced rest of the ciliary muscle, coupled with relief to the inflammatory tension of the muscle" [no one but Mr. G. E. Walker thinks it does], "and not to an adventitious relief of tension from the tapping of the eye, one would expect to find in this case decrease of tension as soon as time had been given for the rest to have play, and such was the result."

Essay No. 2 is On Exophthalmos; its Treatment and Diagnosis. It is a very empty production, in the author's usual confused and verbose style.

Essay No. 3 is On Gonorrhœal Ophthalmia. In it the author takes 24 pages to say he finds the best treatment for purulent

ophthalmia to be a lotion of sulphate of zinc of from two to four grains to the ounce, applied to the eye by means of a compress of lint, over which a piece of gutta-percha is bandaged.

Essay No. 4 is On Neuro-Retinal Atrophy. The author commences by saying:—

"I shall consider this condition as arising from antecedent inflammation, and the subsequent starvation of the nervous tissue by the contraction of the inflammatory products lessening the calibre of the arteries. This statement is, of course, wide-reaching, and doubtless it is putting the matter roughly."

Very roughly indeed. If a marksman fires in the air, makes a little noise and some smoke, he may say, we suppose, according to Mr. G. E. Walker, that he aimed at the bull's-eye—roughly, no doubt. The outcome of the Essay is that in neuro-retinal atrophy, "roughly" taken, strychnia is a useful therapeutic agent, owing to its power, Mr. G. E. Walker says, of dilating the arteries; and he thinks it acts better when dropped into the conjunctival sac than when used hypodermically, as is usually done. An observation of the author's (p. 177), in connexion with the etiology of certain "cases of so-called idiopathic neuritis and its sequel, atrophy," is worthy of notice. He says, when he has been able to get a history of the mother, he found great loss of uterine blood, generally profuse catamenia, and flooding after labours. This seems to us to be a point which may well demand the attention of the profession.

Essay No. 5 is On Sympathetic Ophthalmia. The author advocates very active mercurialisation in cases of severe sympathetic ophthalmia, and narrates cases in which he has found it of benefit.

To enter into an analysis of all the errors and absurdities of this book would occupy too much of our space and of our readers' time. The foregoing will suffice, however, to indicate the scope and style of the work. We may, in short, say, that there is scarcely a page which alone would not condemn the book as an outrage upon medical literature, and a disgrace to British ophthalmology.

The Plague as it Concerns England. From Official and other Sources. London: Hardwicke & Bogue. Pp. 63.

THIS pamphlet is a well-compiled *résumé* of the recent official published documents concerning the epidemic of plague in the East during the past few years. It professes to deal with "the circumstances under which plague has recently reappeared in the Continent of Europe in Eastern Russia; to estimate the probable danger of this country with reference to an introduction of the disease; to summarise the most recently acquired knowledge of the malady as relates to its prevention; and to inquire as to the position in which our public health administration stands with reference, on the one hand, to preventing the invasion of the plague, and, on the other, to limiting its extent in the event of the disease effecting a lodgment on these shores."

All these professions are carried out in the small space of sixty-three pages. We have some doubts as to the fact of the absolute "disappearance" of the plague from the year 1844 to 1858. A disease whose home is situated in semi-barbarous states cannot be said positively to have disappeared because it was not sufficiently developed on the outskirts of civilisation to attract special attention during fourteen years. It matters but little at present whether plague had or had not completely disappeared from the world, but it does matter very materially that it has reappeared in Eastern Europe during the past two years, and has been very destructive in a country such as Russia, with which we have almost daily intercourse. The real question for us to consider is—if plague were introduced into the United Kingdom, are there conditions favourable to its spread? Mr. Sutton Radcliffe says:—"I have, however, no confidence in the population being plague-proof on account of the long immunity of the country, other than as such immunity is secured by the removal of the local conditions which foster plague." We agree with this sentiment, as does the author before us. There is no doubt that "the local conditions" which may foster plague do exist amongst us, and we cannot agree with our author that "those who are able from personal experience to contrast the state of English towns and villages then [1848] with the state now, may *well look with confidence to our confronting safely the new pestilence.*" The italics are ours. We admit the vast improvement on the state of things since 1848, but we hold that in England—and, still more, in Ireland—the chances of plague spreading, if introduced are alarmingly favourable.

We have recently had—nay, at present there exists—a plague of smallpox in Dublin, and we are bound to say that neither the Local Government Board nor the local authorities took any steps worth noting to control the spread of the disease. Our author seems rather to admire Local Government Boards as examples of administrative efficiency. Our experience leads us to take an exactly opposite view. We are disposed to think that if a plague-stricken ship were to arrive in an Irish port, the affected persons would have ample opportunity of spreading the disease before the cumbrous and inefficient machinery of the central and local authorities was put in action. Once introduced, the means to prevent its spread will probably be similar to those employed in the case of smallpox.

A Digest of the Principles and Practice of Medicine; with a short Account of the History of Medicine and Tables of Indian Materia Medica. By RUSTOMJEE NASERWANJEE KHORY, M.D. (Brux.); Member of the Royal College of Physicians, London; Fellow and Licentiate in Medicine of the University of Bombay, &c., &c. London: Smith, Elder, & Co. Bombay: Thacker & Co. Calcutta: Thacker & Co. 1879. Pp. 1,056.

THIS work—dedicated to Dr. J. Risdon Bennett and Sir Joseph Fayrer—does not claim to be original in its contained matter or design. It is really what its title implies—a medical digest—and contains information concerning the etiology, symptoms, treatment, &c., of disease, culled from the most reliable sources. Although the work is designed primarily with a view to the wants of Indian practitioners, nevertheless it will prove a useful and ready book of reference to Europeans. The work is necessarily of a sketchy character, but the sketches are remarkably good so far as they go. Dr. Khory states that he has "drawn largely upon known medical authorities," yet he does not give any details concerning those authorities. In a work such as this, which professes to be a guide to the student, it is of the utmost importance that the reader should be informed where further information upon each question is obtainable. The want of bibliographical references is a serious defect in Dr. Khory's work. We welcome this book as another link between British and Indian medical literature.

PART III.

HALF-YEARLY REPORTS.

REPORT ON HYDROPHOBIA.[a]

By Arthur Wynne Foot, M.D., Dubl.; F.K.Q.C.P.; Senior Physician to the Meath Hospital.

The recent occurrence in this city of well-marked cases of hydrophobia, the enormous importance of the subject, and the urgent need of correct information upon it, have suggested that it is not untimely to collate some of the most recent works on the disease in question. Among the latest contributions to the subject which we have received is a "Treatise on Hydrophobia" by Dr. J. P. M'Neill. This treatise is a very fair outline of the subject, calculated rather for a sketch of the matter in hand than an essay remarkable for finish of detail. There are so many collateral issues to be discussed in a treatise on hydrophobia that it could not but be difficult to compress a satisfactory essay on the subject within reasonable limits. The author likewise does not appear to have had many, if any, opportunities of observing the disease. This, however, is a melancholy privilege which many are denied. Dr. Wilks[b] remarks that the disease is so comparatively rare that he has seen only three cases during thirty-five years' experience at Guy's Hospital; and in one of the largest hospitals in London there had been no case recorded until quite lately, so that one of the surgeons, now deceased, doubted the existence of such a special disease as hydrophobia, and regarded it merely as a kind of tetanoid hysteria. The Nestor of English medicine, Sir Thomas Watson,[c]

[a] 1. A Treatise on Hydrophobia. By J. P. M'Neill. M.D., T.C.D., &c. London: Henry Renshaw. 2. Article "Hydrophobia." By Prof. Bollinger. Cyclopædia of the Practice of Medicine. H. von Ziemssen. Vol. III. 3. Rabies and Hydrophobia; their History, Nature, Causes, Symptoms, and Prevention. By George Fleming, F.R.G.S., M.A.I. London: Chapman & Hall. 4. The Nature and Treatment of Rabies or Hydrophobia, being the Report of the Special Commission appointed by the Medical Press and Circular, with valuable additions. London: Baillière, Tindall, & Cox.

[b] Lectures on the Diseases of the Nervous System. 1878. P. 358.

[c] Lects. on Pract. of Med. Vol. I., p. 590. Sixth Edition. 1871.

says that three, perhaps four, examples of this terrible malady constitute the whole of his personal experience in the matter. Dr. M'Neill takes a more hopeful view of the disease than most authors, seeing that for the two thousand years that hydrophobia has been known in the human subject the terms of the prognosis vary only in degrees of hopelessness. While we agree with him that "from outset to close, energetic as well as comprehensive treatment of symptoms, in addition to bold and attentive nursing, are required to give hopes of success," we see *at present* no reason for thinking with him "that eventually rabies will be ranked among curable as well as preventable diseases."

Professor Billroth,[a] in his lecture on Poisoned Wounds, speaking of rabies, says:—"As regards the prognosis, we are, unfortunately, compelled to admit that for those patients in whom the disease has come to an outbreak, there is no salvation. The cicatrix and the whole extremity have been amputated together, but in vain! Dieffenbach performed transfusion in such a patient, but in vain! The patients are most comfortable, with absolute rest, in a half-darkened room. For mitigating the convulsive attacks, repeated narcosis, with chloroform, has proved the most effectual remedy, and those who have once become familiar therewith always ask to have it repeated. This includes the small amount of help which we can render to these unfortunate people." The writer of this notice feels constrained, after having seen three cases most energetically treated, to confess, with Romberg,[b] that the therapeutic measures hitherto adopted—and these certainly include all at our disposal—have only proved *meditationes mortis*. His (Romberg's) advice is as follows:—"When the hydrophobia has made its appearance, nothing remains for us to do but conscientiously to fulfil all the duties commanded by philanthrophy; we must entirely eschew all bodily restraint and severity, as the unfortunate individual suffers sufficiently from the conviction of the fatal nature of his disease; all manipulation tending to excite the exalted reflex irritability should be avoided, and this applies more particularly to the repetition of the attempts at drinking, in which the patient is allowed to see the fluid and to feel it with his lips; the object may be better gained by dropping water upon the tongue, or allowing the patient to suck it through a tube, as in a case of Dr. Bright's, where a tobacco pipe was employed. To the last moment we should offer the patient

[a] Billroth's Surgery. Sydenham Society. Vol. II., p. 88. 1878.
[b] On Diseases of the Nervous System. Vol. II., p. 151.

cheering consolation, and avoid mentioning the name of the disease." We fear that the time is still remote when the opinion of Cornelius Celsus (about 200 years B.C.) will be reversed—that hydrophobia is a most deplorable malady, one in which no hopes of recovery can be entertained; or that of Galen (131–201 A.D.), who declared it to be the worst of all diseases; or that of Dioscorides, who pronounces the disease frightful, there being no possibility of saving the life of those attacked.

Dr. M'Neill observes that "the inhalation of oxygen is said to have been followed by recovery in one or two cases lately." Dr. Laschkewitsch[a] has administered inhalations of oxygen to a peasant who, ten weeks before, had been bitten by a rabid wolf. The tetanic muscular contractions ceased, the cyanosis disappeared, and the exacerbations of violence gave place to a quiet gentle condition. The result, however, was fatal, but is said to have been due, probably, to the inattention of the nurses, who discontinued the oxygen inhalations. In a pamphlet entitled "Inhalation of Oxygen in Disease," I do not find any mention of its use in hydrophobia; and a successful case could hardly fail to be enlisted among the cures effected by this method. Curare is a medicine which has lately been spoken of as holding out some hope in hydrophobia. Dr. M'Neill remarks, the evidence seems to show that at present curare is about the most direct antagonist to rabies we possess. Dr. Offenberg, in 1874, treated a female with doses of one-third of a grain every fifteen minutes till the hydrophobic spasms were replaced by a general paralysis so complete as to render necessary artificial respiration for some time. In using curare we must beware of the risk of substituting one form of death for another; it is also to be remembered that it must be injected subcutaneously, and extreme caution should be taken that the operator should not prick himself with the needle, and should not use it on anyone else till it had been thoroughly purified. There is reason to believe that curare is little or no use when given by the mouth, as, like snake-poison and the venom of rabies itself, it is not absorbed from an unbroken surface. The dose also must be much larger than one suitable for other cases, such as chorea, &c. Professor Paccianti,[b] of Pisa, has injected as much as six grains of curare in four operations, spread over a space of six and a half hours, without producing any of the physiological effects of the poison, and without arresting the termination of the

[a] Gazette Médicale. Paris, 1872. No. L.
[b] Epitome of Therapeutics. Stone. P. 174.

rabies in death. The occupation of the system by the poison of rabies seems to annul the influence of other poisons, for Babbington[a] has given a patient as much as 180 grains of opium in eleven hours without producing a narcotic or any other effect. Nord has given a drachm of belladonna in twelve hours without any benefit.

The chapter in Dr. M'Neill's book on the pathology of the disease is substantially founded on the Report on the Pathological Anatomy of Hydrophobia by W. R. Gowers, M.D.,[b] which is drawn up from the morbid appearances found in the medulla oblongata and spinal cord in four cases of hydrophobia, and which is accompanied in the Transactions of the Pathological Society with three plates from drawings by Dr. Gowers. A change common to all four cases is the great distension of the minute vessels of the gray matter of the cord and medulla—a distension which, in degree, is certainly pathological, even allowing for the effect of the asphyxial mode of death. This vascular distension was most marked in the neighbourhood of the gray nuclei of the medulla oblongata, in the floor of the fourth ventricle.[c] Cell infiltrations of the perivascular sheaths were most intense in the region of the hypoglossal, pneumogastric, and glosso-pharyngeal nuclei. The region in which the lesions were most intense corresponds to that in which experimental physiology has located the "respiratory centre" of the medulla; and it is of interest to note that the paroxysms of spasm, which constitute the chief feature of the developed disease, are paroxysms of respiratory spasm. Dr. Gowers concludes that there is certainly nothing in the histological characters of the lesions which can be regarded as specific of the disease. The collection of cells in the perivascular sheaths has been observed in other diseases, and formed the most conspicuous feature in a case of canine chorea brought before the Medico-Chirurgical Society by Mr. Sankey and Dr. Gowers. But the distribution of these lesions—their intensity in the lower part of the medulla and in the neighbourhood of certain nerve nuclei—is, as far as he is aware, peculiar to hydrophobia, and constitutes a distinguishing anatomical character. There is a small point in the pathology of the disease in which we venture to differ from Dr. M'Neill—namely, as to the cadaveric rigidity in those dead of hydrophobia, and which, he says (p. 25), is not well marked. In two cases in

[a] Romberg. Op. cit. Vol. II., p. 152.

[b] Transactions Pathological Society, London. Vol. XXVIII., p. 10. 1877.

[c] Hence probably the frequency of glycosuria in hydrophobia.

which we specially attended to this matter it was found "intense"—one (a male) was inspected twelve hours after death; the other (a female) had it extremely marked at nine hours, and it continued to be so at twenty-one hours after death. We are aware that Dr. Faber,[a] of Schorndorf, in enumerating the points of differential diagnosis between tetanus and rabies, says that in the latter there is no rigidity after death, but we do not find this statement confirmed by any recent pathologist. The Report No. 4, which has been published in a most convenient form, is, in our opinion, the best treatise on the subject extant; it is, as Sir Joseph Fayrer,[b] in reviewing it, observes, "altogether a most valuable one," and does the greatest credit to the industry and judgment of its authors.

The essay of Bollinger is divided into two sections—hydrophobia in animals, and hydrophobia in man. As man is invariably infected from animals, for there is no example of the transmission of the poison from man to man,[c] it is essential that the conditions of the disease in the lower animals should be understood. Bollinger is an authority of the first order on the disease in question, being at present Extraordinary Professor of Comparative Pathology at the University of Munich, as well as Professor of General Pathology at the Central Veterinary School of Munich, and is the author of many scientific works of great importance.

The first unmistakable account of hydrophobia (rabies) in animals is found in Aristotle (322 B.C.), and Celsus, Dioscorides, Cælius Aurelianus, and Galen have left us accounts of the disease which equal those of the best writers who have followed them,[d] the same characteristic features being ascribed to hydrophobia in our own day that were accorded to the disease by the writers of two thousand years since. Hydrophobia (rabies), which prevails chiefly among animals of the canine species (dog, wolf, fox, hyæna, jackal)—often as an epizootic—is an acute infectious disease, coming on in the form of a functional disturbance of the central nervous system, with an absence of all gross anatomical changes, and distinguished from other similar diseases by its long and extremely variable period of incubation. The communication of the poison is effected almost invariably by means of the bite of a rabid or infected animal,

[a] British and Foreign Medico-Chirurgical Review. Vol. XVIII., p. 530.

[b] Brain: a Journal of Neurology. Vol. I., p. 238. 1879.

[c] Syst. of Surg. (Holmes). Art. Hydrophobia. Vol. I., p. 625.

[d] Gamgee. Article Hydrophobia, in R. Reynolds' System of Medicine. Vol. I., p. 711.

whereby the poison is implanted directly in the animal injured; it is essential that the virus should come in contact with an abraded portion of the skin or mucous membrane, in which respect it bears the closest resemblance to syphilis. The existence of a spontaneous or idiopathic development of hydrophobia, which is extensively credited, is entirely unproved. The disease is transferable from animals of the canine (or feline) species to man and to all domestic animals. The prevalence of hydrophobia in an epidemic form (as an epizootic) is a phenomenon which has frequently been quoted in support of its spontaneous origin, but there can almost always be detected, upon careful examination, one or more central points which serve as distinct *foci* or centres of infection. It is known, moreover, that the spread of the epizootic is arrested by the larger rivers. It is frequently stated that the disease is not known in Turkey and the East, where dogs are not subject to the changed nervous influences which restraint, domestication, and training effect, but this opinion is quite erroneous. The disease prevails also in those localities where dogs roam at large, and where, as in Constantinople, they pass their life in freedom from all control. Ahmed Effendi, Veterinary Professor in the Military Academy at Constantinople, stated at the International Veterinary Congress held at Vienna in 1865, that "in the East—that is to say, in Turkey—the disease known as canine madness exists, and it appears, though very seldom, not only in dogs in villages and in the country, but likewise in those in large towns."[a] Those who refer to ungratified sexual desire as a factor in the etiology of rabies, and who have advocated the castration of all dogs not intended for breeding purposes, rely for their proof upon the extremely disproportionate occurrence of the disease in male animals. However, the disproportion existing in the number of male and female dogs in all countries is remarkable. In Central Europe the females form only from 10 to 15 per cent. of the entire number of dogs. On this subject the evidence of Professor Coleman, taken in 1830 before a committee of the House of Commons, is to be borne in mind. He stated that when rabies finds its way into a kennel of fox-hounds, the mad dogs bite the dogs, but spare the bitches. Among 392 collected instances, 356 dogs were bitten and 36 bitches; the ratio being almost exactly that of 10 to 1.[b] According to the evidence of statistics, the total number of mad dogs is

[a] Fleming. Rabies and Hydrophobia. P. 74.

[b] Lects. on Pract. of Physic. Sir Thos. Watson. Vol. I., p. 614. 5th Ed. 1871.

divided between the two sexes in a ratio nearly equivalent to the numerical relation of the two sexes to each other; and, on the other hand, castrated dogs are just as liable to contract the disease as other dogs. Furthermore, the occurrence of hydrophobia in wild animals (wolf, fox)—among whom the numerical relation of the males to the females is a natural one, no obstacle being interposed to the gratification of the sexual appetite—affords proof of the fallacy of the hypothesis. In the case of wild beasts confined in menageries and zoological gardens, to whom the gratification of the sexual appetite is for a long period of years denied, hydrophobia is never seen to arise. All attempts to produce hydrophobia artificially, such as those made by Radi and Bourgelat, by starving and irritating dogs shut up together, have been quite ineffectual. The theory so frequently advanced, that even the bite of an angry dog is sufficient to produce hydrophobia, is, upon *à priori* grounds, extremely improbable, since, were this the case, almost every dog-bite would have a fatal effect, inasmuch as dogs are, as a rule, apt to bite only when irritated and enraged. But it is most important to bear in mind, in this connexion, that the bite of an infected, though at the time apparently healthy, dog, when inflicted during the period of incubation, has even then the power of communicating the disease. Thamhayn has collated nineteen cases, occurring in the human subject, in which dogs, to all appearance healthy, but which subsequently became rabid, produced by their bite hydrophobia, the result being fatal in eighteen of these cases. Fessler relates the case observed at Bamberg of a dog whose penis was cut off during the act of coitus, and who died in the course of a few days from gangrene of the wound, without having manifested any symptoms of hydrophobia. His master, who had been bitten by him, was seized in the course of a few weeks with hydrophobia, and died. Bollinger states no instance of the transference of the poison of hydrophobia by intermediate vehicles is as yet known to have occurred. However, the late Abraham Colles[a] states:—"I saw a young girl, who, while standing at a hall-door, had her apron torn by a mad dog that made a snap at it in passing. She got a needle and thread and sewed up the rent, and not having a pair of scissors by her, she cut off the thread with her teeth, and she got hydrophobia and died of it." Mr. Youatt relates a somewhat similar instance. A man endeavoured to untie with his teeth a knot that had been firmly drawn in a cord. Eight weeks afterwards

[a] Dublin Medical Press. Vol. II., p. 82.

he expired, undeniably rabid. It was then recollected that with this cord a mad dog had been confined.

In short, it may be stated that hydrophobia, like all other infectious diseases, never arises spontaneously, but requires, as an indispensable antecedent causative factor, an infection, by the introduction into the organism of the specific *materies morbi*. Predisposition to the receipt of the virus is, on the whole, moderate. In artificial attempts at inoculation, from two-fifths to two-thirds of the animals inoculated or bitten were infected. From causes which cannot be explained, inoculation is often unsuccessful, even when performed under the most favourable circumstances. Many dogs resist all infection; nine different attempts, in the course of three years, to inoculate the famous poodle of Hertwig, were ineffectual, while other dogs in whom the same poison was implanted were infected. According to the experiments of Ménécier, a rich feeding of the dogs that have been infected favours the outbreak of the disease, while, on the other hand, it is retarded by poor nourishment.

The various attempts to dispute or deny the existence of hydrophobia as a specific disease are not easily comprehended by such persons as have had occasion to witness the disease, with all its horrors, in cases of animals and men. As such hypotheses have not been adopted to any great extent either by professional men or by the public, they may, on the whole, be pronounced tolerably harmless; nevertheless they might, under certain circumstances, be conducive to very great injury.

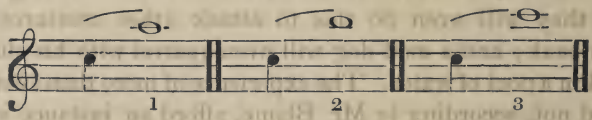
The specific infecting principle of hydrophobia is absolutely unknown, but the virus is contained in the saliva and foam of the affected animal—also in the blood and salivary glands. It is always fixed, never volatile; it is not diffused by the air, nor communicated by the breath: neither chemical nor microscopical analyses of the saliva of mad dogs have as yet given any clue to the detection of its intimate nature. The virus is reproduced only within the diseased economy—never outside the same—and belongs therefore to the endogenous morbific agents. It is distinguished from the other chemical and morbid poisons principally by this circumstance, that it remains within the organism for weeks and even months without producing any morbid symptoms whatever. *Where* the poison remains during the long incubation period—whether in the cicatrix, the nearest lymphatic glands, or the blood, is entirely unknown. The hypothesis that the virus is localised at the seat of inoculation is supported by the fact that an unquestionably

beneficial effect is produced by the prompt local destruction of the tissues forming the *atrium* of the poison. This theory also renders quite intelligible the favourable results (verified by several writers) which are obtained by the destruction—even after the lapse of some little time—of the local deposit in which the process of incubation is taking place. The virus continues active for some time after death—hardly longer, however, than twenty-four hours. We have no accurate knowledge as to whether the virus of hydrophobia possesses a variable intensity or virulence, depending upon the individual from which it is obtained. It is very generally asserted that the so-called sullen hydrophobia, or dumb rabies, has a less infectious property than the violent species of the malady. The interval between the bite and its effects—the period of incubation—is very much longer in man than in animals.

With regard to the geographical distribution of the disease in animals, it may be stated that no land or climate is free from hydrophobia. Constantinople is not, as is generally believed, any exception, as there hydrophobia rages in some years—*e.g.*, 1839—very widely. Nor are the Polar regions exempt, as, in February, 1860, hydrophobia broke out as an epizootic in Upernavik, the northernmost settlement of Greenland (70° north latitude). The thermometer stood then for some time at 25° F. below zero, and the favourable condition of the sledge-roads contributed greatly to the spread of the disorder, which proved fatal to all dogs attacked.

It is not necessary to dwell upon the stages and symptoms of the disease in dogs, but two or three points should be known by everyone. According to the most experienced observers a disordered appetite forms one of the most constant morbid symptoms at a very early stage of the disease. The dogs reject all food, touching only a few favourite bits, or at other times the particles taken are dropped from the mouth. On the other hand, they will swallow all sorts of indigestible substances, such as are never devoured by healthy dogs—hair, straw, dung, rags, earth, bits of leather, and the like. Their movements already begin to show signs of uncertainty, or there is observable a weakness and tremulousness of the hind part of the body. A tendency to wander away is a very early feature in the disease, and, as has been correctly observed by Hertwig, the desertion of his home by a previously faithful dog indicates the existence of a high degree of mental disturbance. The propensity to stray off—especially after having been excited or corrected—is then often ascribed to fear, obstinacy, disobedience, or unsatisfied

sexual desire; and the animal is all the more dangerous in this state if he quietly and peaceably return home. It often happens that the early symptoms are insignificant, nor are they uniformly present; and for this reason the greatest danger incurred by man is at this stage, especially since, as was noticed before, the bite of an infected though apparently healthy dog, when inflicted during the period of incubation, has even then the power of communicating the disease. A pathognomonic sign that frequently makes its appearance in the first stage is a peculiar alteration in the tone of the voice. When an attempt is made to bark, a peculiar sound, between a bark and a howl, is uttered in a rough, hoarse tone. The sound of the bark is altogether so peculiar that it has been likened to that of a cock-crow, and hence experienced French veterinarians say that the rabid dog has *la voix de coq;* others again, as Blaine, have compared it to the "giving tongue" of the old heavy Southern harrier; while others have imagined it to resemble the cough in croup. In emitting this characteristic noise—such as is heard in no other disease of dogs—the animals raise the muzzle somewhat in the air, just as healthy dogs do at the sound of music. It is very difficult to express in words the character of the voice in this howling—which is frequently the first indication of the disease; it is usually most frequent at night, and has something so sinister and lugubrious about it as to strike those who understand its import with a peculiar kind of terror. To indicate its compass M. Sanson[a] has had recourse to musical notation, which may give some idea of the three varieties of sounds usually heard:—



In the three bars the C crotchet represents the bark, which slides up into the howl indicated by the semibreves A, B, and C—the last, the octave, being incomparably more common than the other two.

A sudden and strange alteration in the familiar voice of a dog should at once attract attention and elicit inquiry; the rabid cry or howl is a sure warning, and affords just grounds for alarm, as it is one of the precursory symptoms of the furious stage of the disease.

To show the importance of recognising the modified bark of a

[a] Fleming. Op. cit., sup., p. 208.

mad dog, Bouley[a] gives the following authentic anecdote:—Some years ago two veterinary students, returning to the Alfort School about nine o'clock in the evening, heard the howl of a rabid dog proceeding from a house in Charenton. They felt impelled to knock at the door and warn the proprietor of the danger that menaced him, and he, fortunately, taking the warning as seriously as it was given, kept the animal (a watch-dog) on the chain during the night, and the next day took it to Alfort. The students had not been deceived, for M. Bouley certified that the dog was mad, and its master could scarcely recover from his astonishment when told so; he could not believe that the creature he held in his hand, and still as docile, affectionate, and obedient as usual, could be attacked with so formidable a disease. It was so, nevertheless; and from the time it occupied the cage destined for sick dogs, the symptoms of rabies manifested themselves in the most evident manner.[b]

In dogs affected with the form of the disease termed "dumb madness" the voice is completely lost from the commencement of the malady—whence the distinctive appellation of this form. The dumb, sullen, or melancholic form of rabies constitutes about 15 or 20 per cent. of the total number of cases.[c]

No special dread of water is manifested by mad dogs, so that the term hydrophobia is peculiarly inapplicable to them, and is now generally replaced by that of rabies or canine madness. So little dread have the canine species of water that they will ford streams and swim rivers, and when in the ferocious or second stage of the malady they will even do this to attack other creatures on the opposite bank; and a mad dog will even quarrel with his shadow as reflected in a pool of water. The experience of more than twenty-five years did not, according to Mr. Blaine, afford an instance in which anything like a dread of water was manifested, or in which a spasm followed attempts to swallow it. The idea that dogs are not rabid when they can drink and do not seem afraid of water is utterly erroneous, and would appear to owe its origin to the presence of hydrophobia in man, which is a marked symptom in him. Therefore, observes Mr. Fleming, beware of a sick dog even when it drinks with avidity, for an aversion to water in rabies does not exist at any period of the disease. In none of the animals, domestic or wild,

[a] Inspector of the French Veterinary Schools.
[b] Fleming. Op. cit., p. 209.
[c] Bollinger. Op. cit., p. 458.

which are subject to rabies has a dread of water been found as a symptom of the disease. The principal domestic animals liable to suffer from it besides dogs are horses, cattle, sheep, goats, swine, and cats. Among the wild animals are first of all the wolf and fox; then the badger, raccoon, marten, jackal, hyæna. They will all lap water eagerly, or at least manifest no aversion to it so long as they are not prevented by the affections of the organs involved in the act of swallowing which often supervene.

Rabies in animals has a uniformly fatal termination after a brief illness. In the dog death ensues in most cases on the fifth or sixth day, very rarely later than the seventh or eighth day, and life is never prolonged beyond the tenth day. The cases of alleged recovery reported from time to time are not supported by trustworthy evidence. Hydrophobia (rabies) in dogs, as in all other animals, is inevitably fatal. Mr. Youatt never succeeded in curing the disease in the dog with anything that he had ever tried.[a] The invariable fatality of rabies can be turned to account, and furnishes an argument against the summary execution of a dog who has bitten people. If a person has been bitten by a dog, or if animals have been wounded by it, and the creature does not at the time exhibit any distinct symptom of rabies, it is well, observes Mr. Fleming,[b] in order to tranquillise the minds of those chiefly concerned, and who are apprehensive of danger, to secure it properly for a number of days—say a fortnight or three weeks—before allowing it to go at large again. If it was really rabid when it inflicted the injury, it will soon exhibit unmistakable signs of the disease and die, or it may then be killed, and every precaution taken accordingly. If the animal lives, its healthy condition should be made known to the injured person, and the assurance that it was not rabid, thence obtainable, will be a source of inexpressible comfort to them. But if the dog is destroyed without any evidence that it was suffering from the disease, then months of the most painful suspense and even anguish may perhaps elapse before the result can be known.

The word hydrophobia, as applied to man, is found for the first time in the writings of Celsus (about 200 B.C.). It is considered that Aristotle[c] was unacquainted with hydrophobia because of his assertion that all animals bitten by rabid dogs became rabid *except man*. If these words of Aristotle are not interpolated—which is

[a] Sir Thos. Watson. Pract. Physic. Vol. I., 626. 1871.
[b] Op. cit. P. 346.
[c] Hist. Animal. Lib. VIII.

at all events a disputed point—the explanation of this extraordinary statement may be that suggested by Shinkwin[a] that it may have happened that Aristotle had seen dogs die from the bite of an animal that had also bitten men who *did not* become diseased, and that this appeared to him so remarkable that he considered it as a rule that man alone was exempt from it. It is known that the receptivity of the virus or the predisposition to infection is much less in man than in other animals, while the period of incubation is much longer.

Hydrophobia in the human subject appears in the form of an acute infectious disease, uniformly fatal, produced only by the implantation of a specific virus, the inoculation with which is brought about almost always by the bite of a rabid animal, most frequently that of a dog.

In consequence of the totally incorrect ideas which have prevailed in all times with regard to this most dreadful of all diseases, the fate of human beings who were seized with hydrophobia was indeed appalling. Nor are matters in this respect much improved as yet, for even in our day (observes Bollinger) there are districts in Europe (the military frontier of Austria) in which the dread of hydrophobia—which to the horror of the population and the despair of the surgeons rages terribly—is so great that human beings who are suffering from it or who are suspected of being so affected are shot by their neighbours, whilst those who have been bitten by rabid animals not unfrequently commit suicide. This procedure reminds us of what Charles Lamb once said, that when a man was bitten by a dog (mad) the proper thing was to shoot the man, and carefully lock up the dog and watch him to see whether there was anything the matter with him. In El Hejaz, in Arabia, Burton[b] was assured by respectable persons that when a man is affected with hydrophobia they shut him up with food in a solitary chamber for four days, and if at the end of that time he still howls like a dog they expel the ghul (devil) from him by pouring over him boiling water mixed with ashes—a certain cure, I can readily believe, adds Burton. Of the spontaneous development of hydrophobia in man there is just as little proof as in the case of animals. An essential factor in the production of infection is a superficial wound of the skin or of the external mucous membrane. The disease may be transferred artificially back to

[a] Lects. on Hydrophobia. By T. C. Shinkwin, M.D. P. 11.

[b] Pilgrimage to El Medinah and Meccah. Vol. I., p. 372.

animals; on the other hand, infection from man to man may be said practically never to occur. In deciding what proportion of the entire number of human beings that are bitten by rabid animals are infected, it is to be borne in mind that the percentage of individuals who, having received a suspicious bite, become ill and die of hydrophobia depends really upon the accuracy of the diagnosis of rabies as occurring in the dog, and whether we take into consideration only the bites of animals decidedly rabid, or whether we include the bites of animals suspected of being mad; and, finally, whether a prophylactic treatment (cauterisation) of the wound has been resorted to, and, if so, within what length of time. If, bearing the above conditions in mind, an accurate computation be made, it will be found that of the human beings bitten by rabid dogs, about 47 per cent. die of hydrophobia. When several individuals are wounded by the same rabid dog, and one of them is attacked with hydrophobia, while the others remain unaffected, the immunity may be to some extent the result of individual predisposition, but may also possibly be produced by circumstances connected with the bite—such as clothing, deposit of the saliva upon the garments, the extent of the hæmorrhage, &c.

By far the most frequent source of hydrophobia in man is the bite of a rabid *dog* (90 per cent.). Wounds upon the face are the most dangerous. Of those bitten in the face fatal hydrophobia results in 90 per cent. If a number of wounds be inflicted at the same time, the danger of infection is thereby increased. Large wounds are in general less dangerous than small ones—a fact insisted on by Dioscorides as much as eighteen centuries ago—because, in case of the former, the virus is more easily washed out by the flow of blood. However, the prophylactic treatment of large wounds presents greater difficulties than that of small ones. Age exerts no appreciable influence upon the deaths from this affection—the youngest and oldest succumbing alike, for the infant at the breast, as well as the old man of seventy-three, have been known to die of this disease.[a] In 195 fatal cases of hydrophobia Thomhayn[b] found 12 between three and five years of age, and the disease has several times been observed in children under one year of age.[c] The relatively large number of persons bitten under fifteen years of age—97 out of 274 in the statistics of M. Bouley—

[a] Aitken. Sci. and Pract. of Med. 2nd edit. Vol. I., p. 675.
[b] Bollinger, op. cit. P. 478.
[c] Fleming, op. cit. P. 152.

is due, according to this authority, to this being the age of childhood, marked by thoughtlessness, imprudence, and helplessness, as well as a tendency to tease and play with animals. The fact that children under two years of age, whose imaginations surely cannot be affected by dread of hydrophobia, are likewise attacked by this disease, disposes of the hypothesis that the disease, where developed in the human subject, is simply an affection of the nerves brought on by apprehension of the formidable malady.

Communication of the specific poison by means of accidental wounds inflicted at the *post mortem* examination of rabid *dogs* has as yet in only two instances been satisfactorily proved. On February 25th, 1857, a student of the Veterinary School at Copenhagen, who had a small wound of the finger, made the autopsy of a dog who had died the previous night of hydrophobia. In April he began to experience pain in the arm. On April 7th he complained of a feeling of *malaise* and fatigue, lay down, and was carried to the hospital, where, on the succeeding day, he died of hydrophobia.[a]

That the malady may be transmitted by the virus from a dead animal has quite recently received another illustration[b] in the case of M. Moreau, a veterinary surgeon of La Capelle, Aisne, France. In July M. Moreau was sent for to Lerzy, to examine the body of a dog which was supposed to have been affected with rabies; and he did so, forgetting that he had a slight abrasion on one of his hands. In the last week of October he began to exhibit the early symptoms of hydrophobia, which he soon recognised. Dr. Mennesson attended him during the course of the disease, but no remedies or appliances afforded relief. The unfortunate man retained consciousness to the last, and his self-possession never deserted him. He implored his attendants not to inspire his breath, and shortly before he died he bade farewell to his wife and child.

We have no evidence that there is danger of acquiring hydrophobia from dissection of a human victim to it. M. Sandras[c] states that many physicians—among them Dr. Bally—were known to him to have wounded themselves while making autopsies on those who had died of the disease, yet none suffered from the wounds, though they used no preventive beyond washing the wound. It was probably in consequence of a belief in the dangerous nature of a hydrophobic corpse that an old statute forbids the presence of

[a] Bollinger, op. cit. P. 475.
[b] Veterinary Journal. Dec., 1877. Medical Press Report. P. 69.
[c] Shinkwin, op. cit. P. 16.

students in the dead-house, at Vienna, during an autopsy on a case of hydrophobia.[a]

Bollinger considers that it is doubtful whether any reliable cases are known in which human beings suffering from hydrophobia have communicated the disease by their bite, although, in view of the successful attempts at retro-inoculation from men to animals, the possibility of that mode of infection cannot be denied. Dr. Shinkwin[b] comes to the conclusion that all the cases on record go to prove that hydrophobia is not communicable from man to man. Among other cases to which he alludes is that of M. Caillard, resident physician of the Hôtel Dieu, who was bitten, in 1814, by a hydrophobic man, whom he, unaided, courageously succeeded in securing after all the attendants had fled. In 1831 he was a second time bitten, while taking a piece of cloth from the back of the pharynx of a child labouring under hydrophobia. A woman, aged seventeen, who ultimately died of the disease, bit a surgeon who brought her out of the street whither she had fled, yet no bad consequences resulted. The propensity to bite on the part of hydrophobics sometimes exposes their attendants to certain risks, and tends materially to unnerve them. Dr. Copland[c] speaks of the case of a boy, aged twelve, who, while sitting on his mother's knee, suddenly sprang forward at Dr. C. with an involuntary impulse which required all his mother's strength to restrain, although he had expressed great attachment to Dr. C. and a desire of seeing him frequently. As soon as the paroxysm had subsided, he excused himself, and said that his conduct arose from a violent impulse and a feeling as if he could tear in pieces whatever came in his way. He died six hours afterwards.

In the case of a boy, aged thirteen, who had been bitten by a cat eight months before, the Report says, "he spat at those about him, tried to bite, and actually did bite, one of the sisters in the hand;" no bad consequence followed.[d] Although Malpighi declares that his own mother died of rabies a few days after having been bitten by an epileptic, and Van Swieten mentions that a young man died of rabies after having bitten his own finger in a fit of passion, it may be, as Trousseau[e] observes, that in

[a] Brit. and For. Med. Ch. Rev. Oct., 1854. P. 314.

[b] Lectures on Hydrophobia, compiled from Manuscript Notes of the late Dr. T. S. Holland. P. 17.

[c] Diction. of Medicine. Vol. III., p. 568.

[d] Trans. Path. Soc. Lond. Vol. XXVIII., p. 19. 1877.

[e] Clinical Medicine. Syd. Soc. Transl. Vol. I., p. 705.

these cases, as in many others, traumatic tetanus was mistaken for rabies.

The period of incubation of hydrophobia in man varies extremely in length; while it is seldom less than fourteen days, it is frequently protracted to from three to six months. In 60 per cent. of all cases the period of incubation is between eighteen and sixty-four days. In the young it is, on the whole, shorter than in the old. After the expiry of the period of incubation, during which the persons bitten feel for the most part quite well, the region of the wound, which by this time is generally cicatrised, becomes the seat of peculiar sensations, pricking, tingling, or painful, and always proceeding from the wound towards the central nervous organs. This local neuralgia is frequently accompanied with insomnia. Among the less characteristic symptoms may be mentioned an unaccountable, restless anxiety, depression, want of appetite, and a great sensitiveness to every breath of air. Not infrequently the aggregate of the symptoms in the first or premonitory stage does not amount to anything more definite than is comprehended in the term *malaise*. The duration of the first or prodromic stage is generally not more than twenty-four hours; very rarely it is extended to two or three days, or even longer.

The second stage—which is called also the stage of excitement, hydrophobic stage—is said to have commenced as soon as the peculiar *spasms of the muscles of deglutition and respiration*, which make their appearance especially when water is offered, have set in. The patients are then suddenly seized with convulsions of a paroxysmal character, which are induced by attempts to drink liquids, by currents of air, or by any kind of agitation. The patients feel thirsty and are desirous to drink, but are prevented from doing so by the spasmodic constriction of the throat. As the malady progresses the condition of nervous exaltation called hyperæsthesia becomes marked, so that the slightest agitation of the air—such as blowing on or fanning the patient, or arranging the bedclothes, or opening or shutting the room door—may throw them into a most violent agitation, and bring on severe convulsions. A case is mentioned by Trousseau[a] in which the sense of smell was so exalted that the scent of some lilac flowers, distant about thirty metres, greatly distressed a soldier who was hydrophobic; and the least movement of the air, as by the opening of the door, made him complain of a disagreeable sensation, as if his face were slapped,

[a] Op. cit. sup. Vol. I., p. 687.

and caused him to jump up in bed. Majendie[a] describes the case of a deaf-and-dumb child who heard distinctly in this stage of the disease. Respiration is as a rule normal while the patient is undisturbed, but during a paroxysm it is gasping, irregular, rapid, and often accompanied by decided dyspnœa. An attentive and intelligent observer will soon observe that the chief abnormality in this function is the execution of a series of involuntary convulsive inspirations, unattended with stridor, wheeze, or râle, precisely similar to those produced by walking into cold water, or by a cold shower-bath being directed on the back of the neck and occipital region.

In this second stage the characteristic phenomenon of "spitting" comes on, as the saliva, which is now secreted in increased quantity, can no longer be swallowed, and is ejected by the patient in all directions. The saliva discharged from the mouth is frothy, slimy, and ropy. The quieter patients expectorate into vessels provided for the purpose, or upon an indicated spot, while by the more excited ones it is discharged upon all sides. The spasms of respiration and deglutition occur in paroxysms whose duration is variable. They come on suddenly, and are of a reflex character, their proximate causes being attempts to swallow, speaking, the sight or thought of fluids, a draught of air, a bright light, loud noise, strong smell, or the approach of a stranger. The intensity of the paroxysms is materially influenced by the sex, age, and individuality of the patient, and by the mode of treatment. In the case of females, and also of children, the attacks run a milder course.

The temperature of the body is usually but slightly elevated, the thermometer indicating about 100·4° Fahr. It seldom rises to 105° or 106° Fahr., and is, moreover, quite difficult to determine, on account of the great restlessness of the patient; it can rarely be made out with accuracy.

The quantity of urine secreted is very scanty, in consequence of the small amount of fluids taken into the stomach. According to Bollinger it "never contains albumen," but "frequently contains a pretty large amount of sugar, evidently the result of lesions in the medulla oblongata." The observations of M. Gubler[b] show that in hydrophobia the urine is acid; nitric acid added to it develops a thick coagulum of albumen, and when cleared of albumen, by boiling and filtration, it gives the reactions which indicate the presence

[a] Fleming, op. cit. sup. P. 253.
[b] Quoted by Fleming. P. 256.

of a notable quantity of sugar. Bazin remarks that if the albuminuria and glycosuria were noted during an early stage of the disease, or during the period of incubation, they would be of importance as symptoms that an outbreak of the malady was impending and likely soon to appear. As examination of the urine in hydrophobia is often neglected, it may be worth mentioning that the writer of this Report took an opportunity of analysing 10 fl. oz. of urine drawn off with a catheter a few hours before death. The man[a] could not pass urine in the ordinary way, as each attempt to do so brought on erections of the penis. The spec. grav. (filtered) at 50° Fahr. was 1026; strongly acid; highly albuminous; no evidence of even a trace of sugar with various tests (this point was corroborated by Professor Emerson Reynolds); no excess of urea; chlorides and phosphates in normal quantity; it was turbid from a sediment of very fine lithates, and was not wholly cleared by filtration with Sprengel's air-pump or by slower methods. A specimen of urine passed on the previous day was of spec. grav. 1040, and loaded with albumen. There is not a note of this specimen having been examined for sugar.

The so-called second stage of hydrophobia has among its especially prominent symptoms the severe spasms affecting the organs of deglutition and respiration, a copious secretion of saliva, and paroxysms of convulsions almost always of reflex origin.

The third stage is called that of paralysis—*stadium paralyticum*—and is in most cases the shortest, so much so that it sometimes seems to be anticipated by the occurrence of death, during or shortly after one of the severe hydrophobic paroxysms of the second stage. The paralytic stage, when observable, is marked by an abatement of all the more distressing symptoms, a diminution in the reflex excitability, less impediment to deglutition, and such apparent improvement that hopes of recovery begin to arise. Many persons are again enabled to drink large quantities of water without difficulty, and this was considered of old to be a certain sign of death.

[a] J. E., a gardener, aged thirty-five, bitten by a rabid setter bitch, on both hands, 21st July, 1869. He appeared quite well up to 23rd October, when he complained of tingling of fingers of right hand (the one most wounded) and of pain in right axilla. At breakfast, on 25th October, while in the act of drinking a cup of tea, he became unable to swallow, and threw the contents of the cup into the fireplace. Was admitted to hospital (Meath) at 10 a.m., 27th October, and died at 11.30 p.m. on the 28th. The wounds had been "causticed" at the time, and also "a cure applied." He told me that for six weeks before the symptoms set in (latter half of period of incubation) he had had "some kind of a strange feeling over him."—A. W. F.

Rabies in man lasts, after the expiry of the period of incubation, in the greater number of cases (in 82 per cent.) from two to four days. Of the total number of those dying from hydrophobia, 59 per cent. die within the first three days.

After treating of the pathological anatomy, Bollinger discusses the diagnosis of hydrophobia in the human subject, which he remarks is not, as a general thing, difficult. Whoever has once viewed the striking clinical phenomena will be able, by the aid of the previous history of the patient, readily to make a diagnosis. The prognosis of hydrophobia in the human subject is absolutely unfavourable. The malady always terminates fatally. In the constantly recurring cases of alleged recovery, either the proof is wanting that the animals in question, by whom the bite was inflicted, were really rabid, or else the pretended instances of recovery from the disease were in reality cases of mental disorder simulating rabies. "Although," says Bollinger, "I by no means wish to deny the possibility of recovery from hydrophobia, I cannot but regard it as a significant fact that not a single case of recovery has been reported by any of the recent able observers."

Since, then, the prognosis in rabies developed in man is of such a nature as to inspire no hope, and in view of the complete inefficacy of all therapeutic agents when the disease is once established, it follows that our chief means of defence lies in an efficient *Prophylaxis*. The prophylactic measures are twofold—*firstly*, those which should be enforced by the State, prohibitive of rabies in animals, the usual source of the disease in man; and, *secondly*, those which concern the treatment of recent bites from animals which may have gone mad in spite of the State.

Among the first class of prophylactic measures may be enumerated the *reduction of the number of dogs*, most readily effected by imposing the highest possible tax upon them; a general registration of all dogs; an obligatory muzzling of dogs at times when rabies prevails as an epizootic; public instructions descriptive of the symptoms and prodromata of rabies to be exposed at police stations throughout the United Kingdom, or to be printed on the back of the tax paper. In elucidation of the above suggestions it may be remarked that the aggregate number of dogs is very large; the total number of dogs in all Europe amounts to about twelve millions, according to the estimate of Boudin. It was computed in 1855 that there were in France no fewer than three millions of dogs. The number of licences issued in England in 1870 was

944,496 and in Scotland 119,471—making a total of 1,063,967; and in the half-year ending 30th June, 1871, the number for England was 951,501 and Scotland 119,671, or a total of 1,071,172. Mr. Fleming thinks there can scarcely be a doubt that the number of dogs which will escape the impost, either through their being ownerless or their owners not complying with the law, will amount to something like one-half the number of those for which duty is paid.[a]

It is a remarkable omission in the Contagious Diseases (Animals) Act, 1878, 41 & 42 Vict., that there is no allusion to rabies, nor does the subject seem to be alluded to even indirectly in the able "Digest of the Act" by P. H. Bagenal, Esq., 1879.

It appears that in France, although the rate of taxation was low, the number of cases of hydrophobia were considerably fewer after than before the imposition of the tax in 1855:—

Before the Tax		After the Tax	
In 1850 - -	27 cases.	In 1856 - -	20 cases.
1851 - -	12 ,,	1857 - -	12 ,,
1852 - -	46 ,,	1858 - -	17 ,,
1853 - -	37 ,,	1859 - -	19 ,,
1854 - -	21 ,,	1860 - -	14 ,,
1855 - -	21 ,,	1861 - -	21 ,,
Total,	164	Total,	103

Mr. Fleming observes that "we have no reason to come to any other conclusion than that a measure of this kind (ample taxation) must be most efficacious in ridding the country that energetically resorts to it of a vast number of miserable and dangerous brutes; but to be really efficient the tax should be general and high, exception being only made in favour of dogs which are useful, or whose services can be proved to be absolutely necessary—such as house, yard, and sheep dogs, or those employed to lead the blind about. With regard to pleasure and sporting dogs, the tax should be highest, for whoever can afford to indulge in keeping such animals can also afford to pay a high tax." It may be stated, furthermore, in favour of the taxation of dogs, of which in Europe about 80 per cent. are kept as a matter of luxury, that these animals, from the fact that they form the vehicles for the communication of various parasites, and also serve as nests for the propagation of these

[a] Fleming. Op. cit. P. 354.

parasites (tapeworm, &c.), exercise a deleterious influence upon the breeding of cattle.

Largely concerned with the prophylaxis of hydrophobia are the proceedings which should be adopted in the case of a recent bite by a rabid animal. These proceedings aim at the prompt and thorough destruction of the virus at its point of entrance into the economy, or at its removal before absorption. In order to effect a rapid and direct extraction of the poison, the application of suction to the wound is advisable, either by the mouth of the sufferer, if the position of the wound permit, or by some other person if it does not. This constitutes one of the most efficient measures, and one that can always be applied upon the spot. The person making the suction should at the same time make pressure on the margin of the wound with his teeth. The blood that flows will carry with it the poison that may not yet have been absorbed, and the prolonged and repeated aspiration made for ten or fifteen minutes by the lips and the squeezing with the teeth will, in all probability, induce a copious hæmorrhage that may still further ensure its entire removal. The virus is quite innocuous to the unbroken mucous membrane of the mouth, which can also be further protected by copious rinsings with water, milk, vinegar, or some form of alcoholic solution. The efficacy of sucking poisoned wounds and the comparative immunity of the operator have been known from the earliest times, and among nearly every people. The practice was rendered famous in England in the thirteenth century by the heroic exploit of the affectionate Eleanor, who safely and successfully abstracted the poison from the wound of King Edward the First, which had been introduced by an arrow. The risk to the operator is not nearly so great as that almost daily incurred in saving drowning persons. When the situation of the wound permits of it the fastening of a cord or ligature, such as a handkerchief, bandage, leather strap, or other likely article, tightly between the wound and the heart, is of use by encouraging a free venous bleeding which will assist in washing off the venom, and at the same time water, warm if possible, may be diligently poured over the bite, or the part may be held under a pump or cock. Mr. Fleming, in his work on "Animal Plagues" (London, 1871, p. 51), gives an account of twenty boatmen who were bitten on the quay at Lyons by a rabid bear. Of this party six were smothered in about twenty-seven days, in consequence of fearful madness. The other fourteen, however, had thrown themselves into the river to escape the animal's

attack, and, having to swim to the opposite bank, were thus preserved from the effects of the poison, as the water of the river, in beating against their wounds, washed away the venom, and thus saved them. There is another instance on record in which several people were bitten by a mad wolf; some of these escaped across a river by a bridge, while others had to take to the water and swim. The latter escaped the disease, while the others perished from hydrophobia.[a]

These measures—suction, washing, and compression—can usually be employed at the moment of the accident, but should always be supplemented, as soon as possible, by same means which will destroy the poison that may have already impregnated the tissues or eluded the attempts to remove it.

Aware of the inhibitory influence that plenitude of the circulatory system exercises on absorption, Lafosse, basing his recommendation on the physiological experiments made by Erichsen, thinks that great utility may be derived from the prompt ingestion of any fluid by the wounded person. Absorption may by this means be so delayed that a substance which, under ordinary circumstances, would be taken up in a minute will, perhaps, not enter the circulation until after thirty or forty minutes.[b]

Of the solid caustics, the nitrate of silver has been highly recommended by Blaine and Youatt. The latter, who, in the course of a long experience, had treated a very large number of persons who had been bitten by dogs undoubtedly rabid, placed the greatest reliance in cauterisation with solid nitrate of silver, which in his experience had in every case prevented the development of hydrophobia. Four times he employed it on himself, but there is a strong probability that the remedy at last failed, for he committed suicide while supposed to be suffering from the initial symptoms of hydrophobia.[c]

Some prefer chemical and corrosive caustic agents in a liquid form as likely to penetrate with greater certainty every nook and corner of the wound. Such would pour nitric, sulphuric, or muriatic acid into the wound. The butter of antimony (a solution of terchloride of antimony in hydrochloric acid) is approved of by many, and is generally accessible. In using this caustic the part should be first well dried, and then the caustic applied with a brush. A

[a] Fleming. Rabies and Hydrophobia. P. 329, note.
[b] Fleming. Op. cit. P. 341.
[c] Hammond. Dis. of Nerv. System. 1876. 6th Edit. P. 661.

slightly diluted solution of carbolic acid, or a strong tincture of iodine, have also certain advantages. If the wound is not in a depending position, so that the liquid may gravitate to its recesses, or if the position of the bitten person cannot be temporarily altered to permit of the caustic acting in this manner, the actual cautery or solid caustic would be preferable.

The application of the actual cautery is mostly indicated in cases of small excoriations or in simple open wounds, as it is less efficient in deep and extensive wounds. It is more applicable for wounds of the limbs or more fleshy parts of the body than for those of the face, on account of the indelible nature of the cicatrix which might result. Should the apparatus be at hand, nothing could be better adapted for the purpose than the thermo-electric cautery of Paquelin. If the operator has to fall back on his own resources he may employ a knitting-needle, skewer, stair-rod, key, or small poker. The hotter the iron is the better, both for the patient's feelings and for the destruction of the saliva and the tissues tainted by it. It should be heated to a bright red or white heat, and applied firmly and unsparingly. As substitutes for the hot iron, a vesuvian or fusee may be lighted and thrust into the wound, or the cavity be crammed with gunpowder, which is then set fire to. Dr. Landerer, of Athens, states that the monks of the island of Salamis thrust a plug of sheep's wool firmly into the wound and burn it *in situ*, a large eschar and suppuration resulting.[a] According to M. Manière, who resided for fifteen years in Hayti, rabies is very frequent there, and appears at all seasons; but the accidents arising from it are not at all in proportion to the number of persons bitten, as every one knows what to do. Gunpowder is to be found in any house, and in nearly everybody's pocket, and is used in the manner described above. Afterwards a blister is applied, and a mercurial treatment—carried to salivation—completes the cure. Notwithstanding the frequency of bites from mad dogs, M. Manière has seen only one person die of hydrophobia, and that individual refused to be treated according to this plan.[b] These local applications are all of such a nature as to produce a tedious and slowly healing wound, which is all the more desirable as the rapid healing of the most fatal dog bites has been long observed. In the case so graphically described by Romberg, the

[a] Buchner's Repertorium, 1861, No. 7, quoted in Med. Times and Gaz., 21st Dec., 1861, p. 644.

[b] Fleming, op. cit., p. 331.

only case which occurred in his own practice,[a] it is stated in the antecedents of the case:—"A few of the dog's hairs had first been cut off to place upon the wound, which *in eight days was completely healed.*" Punctured are more dangerous than lacerated wounds, from the greater difficulty of getting at the virus. The *number* as well as the *nature* and the *situations* of the wounds must be considered in the question of their treatment. Amputation of the wounded part, of a finger for instance, where no additional injury has been inflicted, has been resorted to, and is sometimes indispensable when the soft textures are much crushed or lacerated by the rabid animal's teeth, or when bones are fractured. Should such a proceeding be deemed necessary, there should be as little delay about its performance as possible, as Faber[b] gives an instance of an ox whose tail was bitten by a rabid dog, and though the appendage was amputated within two hours, yet the animal afterwards took the disease. Excision of the bitten part is not always easy or safe because of the situation of the injury, and its relation to blood-vessels, nerves, and tendons. If the wound penetrates a joint, or involves the nose, eye, or penis,[c] the difficulty of decision will be considerable.

Mr. Fleming observes that in excising wounds caused by the teeth of rabid animals, the greatest care should be taken that every portion likely to have been in contact with the saliva is removed, and particularly that the knife itself is not instrumental in its diffusion. To avoid this grave mishap, all around the wound should first be well washed, in order to clean away any saliva lying on the surface, then the excision should be carried on beyond the injured part, and the knife frequently dipped in a solution of carbolic acid.

Of the many "charms" and "certain cures" for hydrophobia the only one which seems to have a grain of sense in it is the custom of cauterising with a church key. Dr. Holland states that the keys of the churches of St. Roque and St. Pierre, Paris, were often worn out from having been repeatedly used. Of all the

[a] Diseases of Nervous System, Syd. Soc. Vol. II., p. 138.

[b] Die Wuthkrankeit, p. 295, quoted in Fleming, op. cit., p. 337, note.

[c] A man, aged thirty-five, had been bitten slightly on the penis by a little lap-dog about ten months before. Hydrophobia set in. Death occurred on the third day. The chief peculiarity was a constant and distressing inclination to pass urine, while scarcely any was voided. He felt, every now and then, something flash through him, as if he were electrified, beginning at the penis. (Sydenham Society Year-book, 1864, p. 71.)

keys used for this purpose that of St. Hubertus seems to be the most potent, and his shrine in Belgium, in the Ardennes, is still largely frequented. Hubert, the patron saint of Hunters, was, Dr. Holland tells us, a hunter by profession, led a not too strictly moral life, was first converted by a miracle, and received direct from heaven a golden key, all powerful to heal persons bitten by rabid animals. After his death he was made a saint, and his key is still in existence, and was used in the following manner:—The person who had been bitten first confessed, and received absolution, after which the following prayer was said:—"Oremus, omnipotens sempiterne Deus, qui beati et gloriosi Confessoris tui et Pontificis Huberti meritis, saepe diversos morbos et languores curasti, concede perpetuo ut cuncti, qui ejus implorant auxilium ab infestione dæmonum et subitaneo morte et omni rabie, morbo, et periculo corporis et animæ jugiter ejus intercessione liberati per Christum dominum nostrum. Amen." After the repetition of this prayer the key was heated in a fire, and while heating, the patient repeated the following prayer:—"Deus qui beatum Hubertum Confessorum tuum atque Pontificem ad viam veritatis mirabiliter conversisti et plurimos dæmoniacos mentis raptos et rabie infectos ipsis periculis restituisti tribus quæsumus ut ejusdem patrocinio famulus (famula) læsus (læsa) ab omni intoxicatione ac dæmonium incursione aberrata et sana tibi mente et corpore famuletur, per dominum nostrum Jesum Christum. Amen." The bitten part was then cauterised with the key, and if it was considered desirable to increase the security against the consequences of this present as well as of all future injuries, the man or animal—for it could be used to either—was burned *under the tongue* and on the forehead with the round or handle part of the key.[a]

There can be no doubt that prompt and decided local treatment of the bite has great moral effect in the prophylaxis of hydrophobia, and that the effect is in proportion to the confidence in the remedy and the operator. Moreover, as Bollinger observes, the *psychical treatment* of the patient after a suspicious bite is of great importance. On the part of the medical attendant, and those about the patient, the greatest care should be taken "to preserve a calm demeanour, to avoid all allusion to the previous injury, and to appear cheerful" (Romberg). The physician should impress upon the mind of the patient a conviction of the efficacy of his

[a] Lectures on Hydrophobia, from Notes of the late Dr. T. S. Holland, by T. C. Shinkwin, M.D. Pp. 58, 59.

treatment (Virchow). Attention should furthermore be paid to physical and mental rest, to regular habits of life, to the abstinence from all kinds of excesses, and the avoidance of every excitement.

As to the *therapeutical treatment* of the developed disease, the greatest difficulty would be to say what substance in the three kingdoms of Nature there is which has not been used—all, however, without effect; an opinion which puts us very much in the position of the native doctors of Ceylon, who "acknowledge their inability to cure hydrophobia, saying they can heal the bites, but the gods must do the rest."[a] Still there are a few methods of treatment which are entitled to some observations, among which are mercury, the hot-air bath, viper-venom, chloroform, curare, and transfusion. Some of the "certain cures," or specifics, for hydrophobia are, Sir Thomas Watson[b] observes, great secrets, as you may suppose; and they who possess them—whether they believe in them or not is another matter—sell them at no cheap rate to those who, having been bitten by the dog, are weak enough to be bitten again by the quack. It was thought that salivation from mercury would be of use in hydrophobia, from the fact of spitting being so prominent a symptom of the developed disease. Marochetti even asserted that the virus accumulates in and is temporarily retained about the orifices of the sublingual ducts. The exhibition of the mercurial preparations—internally in the form of calomel, externally by means of the mercurial ointment, to the extent of ptyalism—has never been of any efficacy, notwithstanding its extensive employment; on the contrary, it has rather tended to aggravate the misery of the patients, inducing a more copious flow of saliva, while the manipulations involved in the inunctions, acting as a strong excitant, tend to induce a constant recurrence of the convulsive paroxysms. The reputation of the hot-air bath chiefly rests upon the case of Dr. Buisson, who having wiped his hand with a handkerchief impregnated with the saliva of a female in the last stage of hydrophobia, *nine* days after became affected with peculiar nervous symptoms. He went into a *vapour* bath, not with the intention of cure, but of suffocating himself. When the bath was at a heat of 52° centigrade (125·6° Fahrenheit), all the symptoms disappeared as if by magic, and never returned. There are many features in this case which justify the author of the *Medical Press* "Report" in not attaching much importance to it. Hammond says: "In the present

[a] Eleven Years in Ceylon. Forbes. Vol. I., p. 363.

[b] Lectures on Practice of Physic. Vol. I., p. 626. 1871.

state of our knowledge I should be more disposed to rely on the *hot-air* bath at a temperature of about 200° Fahr., and the administration of hydrate of chloral in large doses, frequently repeated, than on any other plan of treatment."[a] Speaking of the established disease, Sir Thomas Watson[b] says: "If I were the unhappy subject of it, I should wish to be put into a *hot-air* bath and thoroughly sweated, and to have morphia injected into my subcutaneous areolar tissue—not so much in the hope of recovering as with a view to the *euthanasia*."

The antagonistic action of poisons is a doctrine which has always had a firm hold upon the popular mind, and hence the belief, which, however, is necessarily limited, in the efficacy of viper-venom against the poison of rabies. For example, under the head of "Antidote against Rabies," we read[c]:—"Dr. Jitzky lately communicated a very interesting circumstance to the Imperial Society of Wilna, in Russia, respecting a very vicious dog, who had a habit of rending vipers (coluber berus) into pieces, and whose muzzle and neck were covered with tumours produced by the bites of these reptiles. This dog was bitten by a rabid dog, which had caused death to several horned animals and a young dog. The owner of the first-mentioned dog, who valued it, kept it alive, but watched it continually, so as to destroy it on the first appearance of rabies. No symptom of the disease, however, appeared; and, to the great astonishment of Dr. Jitzky and of its owner, the dog continued in perfect health. But what particularly attracted Dr. Jitzky's notice was that a woman living in the same locality was first bitten by a viper, and subsequently by a mad dog, and hydrophobia did not ensue." The objection to any inference being made from either of these cases is obviously that the bite of a mad dog by no means invariably produces rabies in another dog, or hydrophobia in a human being. Prince Louis Lucien Bonaparte, distinguished for his "Chemical Researches on the Venom of the Viper," and his isolation of its active ingredient, *echidnina*, which is identical with *crotaline*, the active principle of rattlesnake-venom—having previously heard some questionable tales of hydrophobia being cured by viper-venom, sought and obtained an opportunity of trying its effect on a youth, fifteen years' old, suffering from hydrophobia in the Hospital of St. Maria Nuova. The lad

[a] Diseases of Nervous System. P. 662. 1876.
[b] Op. cit. sup. P. 627.
[c] Lond. Med. Record. May 20, 1874. P. 313.

had been bitten by a mad dog fifty-three days' previously. As many as six vipers in succession were applied to the patient; the bites of the reptiles did not in the slightest degree diminish the hydrophobic symptoms; the symptoms became more violent after the application of the viper-venom, just as it would have happened if the vipers had not been applied at all; no trace of the symptoms of poisoning by viper-venom appeared, nor was there any modification of those of the hydrophobia. The patient expired shortly afterwards in the most violent convulsions.[a]

Chloroform, said to have been first applied to the treatment of hydrophobia by Dr. Hartshorne, has no curative effect, but can be used with advantage as an auxiliary, for when under its influence various kinds of food and stimulants can be introduced by tubes into the stomach or bowels, and thus the distress caused by swallowing will be avoided. Bollinger puts it at the head of all the narcotic agents in the treatment of hydrophobia. With the production of complete chloroform narcosis, the paroxysms cease, returning, however, with the disappearance of the insensibility. The great difficulty in the use of chloroform lies in the fact that the patients struggle so against the inhalation of this agent that its administration is often impossible. Dr. Shinkwin states that in the only case of hydrophobia which came under his notice, chloroform was employed, and the patient, a fine boy, died under its administration. "So strong was the impression left on his mind from the result of the case that, were there no other remedy to be used, he would not *dare* give it in this fearful affection."[b] Wagner, who, as the result of his own experience, strongly recommends chloroform, availed himself, at the same time, of the state of narcosis to administer, by the aid of the œsophageal tube, an abundant supply of nutritious food. He succeeded in keeping a patient in the condition of chloroform narcosis for sixteen consecutive hours.

Curare, whose influence in hydrophobia has been already alluded to (see p. 289), has very recently been used, apparently with success by Dr. Offenberg with a woman who had been bitten by a mad dog. "He (Dr. O.) did not confine himself to the usual small doses, but injected about two decigrammes of curare under her skin in the course of five hours. The patient was in a terrible state, and seemed on the point of being suffocated when the

[a] Brit. and For. Med. and Chir. Rev. July, 1869. P. 168.
[b] Lectures on Hydrophobia. P. 56.

injections were made. After the first injection the convulsions ceased suddenly. This was owing to the power which curare has of paralysing motion. After a short pause, however, the convulsions began again, and several additional injections had to be made. At last the effects of the curare became so powerful that the patient was in danger of dying of paralysis of the heart and the respiratory muscles, and could only be saved by artificial respiration. She then fell into a state of exhaustion and weakness, from which she recovered after a time and became quite well."[a] Another case of hydrophobia, treated with success by Dr. Offenberg with large doses of curare, is given in great detail in the "Report of the *Medical Press* Commission" (p. 63). In his remarks upon the case, Dr. Offenberg regrets that the definite dose of curare to be used cannot be indicated for two reasons—one is the variation in the quality of the drug, the other is the excitability of the nervous system. The strength of the different preparations of curare is very uncertain, and the tolerance of it by the nervous system is also very variable. The greater the excitation and the excitability, and the greater the physical exaltation in hydrophobia, the more violent and intense will be the spasms, and the greater must be the amount of curare to hold these spasms in check. A dose of curare, such as in a healthy individual with a normal nervous system would produce decided effects on the motor powers, would produce scarcely any effect whatever on one who is the subject of hydrophobia. The surest and safest way to obtain the effects of curare is by often repeated small injections. The subcutaneous dose begins to show its effects in less than two minutes, and its action only lasts from four to five hours. It is of importance to commence this treatment early in the disease; while the spasms are still slight, small doses will suffice, and by making small injections every half hour its physiological action is secured, while any sudden and too energetic manifestation of its toxic qualities is avoided.

Offenberg observes that Niemeyer seems to have been the first to have tried curare in hydrophobia, and although it did not succeed, he strongly urged a further trial of this drug in larger doses in other cases of hydrophobia. In his text-book of "Practical Medicine,"[b] Niemeyer does not allude to the use of curare in this disease, but observes—"I should not hesitate to resort to any

[a] Allg. med. centr. Zeit. No. 57. 1879. Lond. Med. Record., 15th Aug., 1879. P. 307.

[b] 7th Edition. Vol. II., p. 719.

procedure, be it never so severe or dangerous to the life of the patient, if, according to actual experience, any benefit were to be expected from it. The disease having once declared itself, no time should be lost in experiments which only aggravate the patient's sufferings without promise of relief. He must be preserved from injury, and we should strive to calm his mind, and take care that his nursing be managed with the utmost tenderness. In vigorous subjects copious bleeding may be resorted to, as there are instances in which this has undoubtedly acted as a palliative. In other cases we must confine ourselves to the use of narcotics, and to the occasional and repeated inhalation of chloroform." A case is reported by Dr. Watson, of Jersey City, New York, in which curare was used with success. The doses were augmented from $\frac{1}{16}$th gr., $\frac{1}{9}$th gr. to $\frac{1}{6}$th gr., when after the third injection the unfavourable symptoms subsided. In the use of curare—a poison itself of the most dangerous and deadly description—the strange anomaly presents itself of the physician being permitted to use on man himself that which he is prevented—unless he be a licensed experimenter—from using tentatively, for the benefit of the human species, on the lower animals.

Considering the nature of the operation and the difficulties which attend it, it is not likely that transfusion will often be had recourse to; and yet it is on record[a] that in Suffolk, during 1792, blood was transfused directly from a lamb into the veins of a boy in hydrophobia, with the effects of saving his life, while twenty of the people in the district perished from the disease. Dr. Holland[b] gives other instances of this practice, and thought so highly of it as to form the deliberate conclusion that, should it please Providence to afflict him with this disease, he would have used in his own case what he would recommend in others—namely, extraction of blood until syncope was produced, to be followed by immediate transfusion of nearly a similar quantity of lamb's or sheep's blood, and these operations to be repeated at as short intervals as was consistent with the safety of the patient.

The practice of smothering or otherwise putting an end to persons affected with hydrophobia will, it is to be hoped, soon become merely a matter of history. Youatt[c] gives an instance of this custom:—A child was bitten by a rabid dog at York and became

[a] M'Neill. On Hydrophobia. P. 72.
[b] Shinkwin's Lectures on Hydrophobia. P. 67.
[c] The Dog, p. 154, quoted from Daniel's Rural Sports. Vol. I, p. 220.

hydrophobic. All possibility of relief having vanished, the parents, desirous of putting an end to the agony of their child, or fearful of its doing mischief, smothered it between two pillows. They were tried for murder, and found guilty. They were afterwards pardoned; but the intention of the prosecutor was that of deterring others from a similar practice in a like unfortunate situation. Sir Jonah Barrington[a] states that "they (the Irish) did not regard it as murder, but absolutely as a legal and meritorious act, to smother any person who had arrived at an advanced stage of hydrophobia." He then details a case from his own knowledge, which occurred about the year 1781, of one Daniel Dempsey, who was subjected to this process, with the sanction of a magistrate (Mr. Palmer), after an affidavit had been sworn by three of the neighbours who could read and write, to the effect that "Dan. Dempsey had been bit by a mad dog; that he went mad himself, barked like any greyhound, and had no objection to bite whatever Christian came near him." A coroner (Mr. Calcut), held an inquest on the body, when a verdict was returned that Daniel Dempsey died in consequence of a mad dog. In Chapter X. of the *Medical Press* Report, in which the curiosities of the treatment and literature of hydrophobia are industriously collected, there are many references to this mode of treatment. In the *Annual Register* of 1722, p. 121, it appears that "four persons were tried at York Assizes for smothering a boy, who had been bitten by a mad dog, between blankets. They are said to have been acquitted for want of evidence." In the *Annual Register* for 1830, p. 102, it is stated that a young peasant girl, in the parish of Killenag, a remote part of the County Galway, was bitten by a rabid dog, and in two days manifested unequivocal symptoms of hydrophobia. Her parents procured two feather beds and smothered her. It is greatly to be feared that in this case, if it be correctly reported, there was an error of diagnosis, as hydrophobia does not develop within such a short period after the receipt of the bite. Dr. Holland[b] found in his summary of 120 genuine cases that the shortest interval between the bite and the first symptom was twelve days. It is highly probable that some acute convulsive affection was mistaken for hydrophobia, as was certainly so in the following case, recorded in the *Dublin Chronicle*, 28th Oct., 1798:— A fine boy, aged fourteen, was bitten by a lady's lap-dog at Blackrock, near Dublin. In about *two hours* the youth was seized with

[a] Personal Sketches of his own Times. Vol. III. P. 42.

[b] Shinkwin's Lectures, Dub. Med. Press, 1865. P. 390.

convulsive fits, and shortly after with hydrophobia; and, notwithstanding every assistance, his friends were obliged to smother him between two feather beds.—*Notes and Queries*, 2nd Ser. Vol. IX., p. 454.

In the *Irish Times* of 18th May, 1861, the following startling announcement appeared:—"Case of hydrophobia; melancholy occurrence. A fatal case of hydrophobia is reported from Newport, County Tipperary, the victim being a fine young woman. It appears that while being engaged in some out-door employment a neighbour's dog bit her in the hand. Hydrophobia in its most fearful aspect set in, and she became so hopelessly mad that it was found necessary to smother her between two feather beds."—*Notes and Queries*, 2nd Ser. Vol. IX., p. 478.

In the *Guardian* of 3rd April, 1867, it was announced that a little daughter of Mr. A. Woodruff, of the town of Greenfield, Michigan, having been seized with hydrophobia, a consultation was held by the physicians, who decided that, as the patient could not possibly survive, every consideration of humanity demanded that her sufferings be ended by some means, in accordance with which the child was smothered to death.—*Notes and Queries*, 3rd Ser. Vol. II., p. 376.

We have reproduced these histories of the fate of unfortunate hydrophobics because many otherwise well-informed persons are inclined to regard them merely as part of the miasma of fable which surrounds this mysterious disease. The practice, as was observed above, is known in Austria and Arabia. It has been argued that an act which would be the purest humanity to a dog or a horse should not rank as murder when committed on a human being under the same circumstances; and, without offering any opinion upon the matter, we think that in hydrophobia will be found the fairest field for those who, in the present day, advocate, on the grounds of humanity and economy, the putting to death of idiots, imbeciles, and very old people.

There is no disease in which the influence of the mind over the body is more exemplified than in hydrophobia. There is, as Trousseau has pointed out, a special form of complaint called *mental hydrophobia*, which is brought on by emotion, on seeing rabid individuals, or on hearing a description of real cases of hydrophobia. This nervous kind of hydrophobia, called also *lyssaphobia* and *hydrophobia imaginaria*, may develop itself under the influence of intense mental emotion, or when certain excesses or special

conditions induce dysphagia or a disgust for food. Trousseau[a] has known medical men—men of strong minds and of courage—who, although well aware of the conditions needed for the development of hydrophobia, for several months, and even years, after having attended persons suffering from hydrophobia and dissected their bodies, were seized with more or less continued dysphagia, on the mere thought and recollection of the scene which they had witnessed. Time alone got rid at last of this nervous susceptibility, which manifested itself in the shape of spasm of the pharynx, and they cured themselves of it by appealing to their knowledge of the disease, and by forcing themselves to drink some liquid whenever they felt the sensation coming on. In this mimetic hydrophobia there is only dysphagia, or difficulty in swallowing, and there is no general convulsion, the spasm affecting the pharynx alone, while the breathing goes on with regularity. The sudden invasion of the complaint, generally coming on through the person recalling to mind, or hearing the relation of, a case of true hydrophobia, and the duration of the dysphagia over four days without any more urgent symptom appearing, are amply sufficient to characterise the affection, and to enable the patient's medical adviser or friends to persuade him that he is suffering from mere nervous symptoms which will vanish as soon as he ceases to fear. With appropriate treatment these cases invariably terminate favourably, and are then apt to be regarded as instances of recovery from hydrophobia.

The late eminent Veterinarian, Professor Dick,[b] advocated the view that hydrophobia was entirely a mental affection. In an essay, read before the Royal Physical Society of Edinburgh, Feb., 1836, on the subject of "What Influence has the Mind in the Modification and Cure of Diseases of the Body?" he investigates the influence of the mind in producing hydrophobia. In this he contends (contrary to facts) that children, until they have arrived at years capable of reflection and excitement, are exempt from hydrophobia, because before that time of life they are incapable of the nervous excitement which, he concludes, is the very essence of the disease. He also maintains that his theory enables him to account for the almost invariable failure of the remedies proposed for the cure of the disease, and to suggest that remedies of a mental character ought to be employed instead of the physical ones which have so generally proved ineffectual; in short, that if we

[a] Clinical Medicine. Syd. Soc. Vol. I., p. 692.

[b] Veterinary Papers by Professor Dick. 1869. P. 352.

could convince the mind that no poison had been communicated, the physical derangements would be easily overcome, or would, perhaps, cease with the excitement which gave rise to them.

In a recent number of the *Cornhill Magazine*[a] a writer on the "Influence of the Mind on the Body" describes the case of Andrew Crosse, the electrician, as an instance of the power of a resolute mind over the body:—Crosse had been bitten severely by a cat, which on the same day died from hydrophobia. He seems resolutely to have dismissed from his mind the fears which must naturally have been suggested by these circumstances. Had he yielded to them, as most men would, he might not improbably have succumbed within a few days or weeks to an attack of mind-created hydrophobia—so to describe the fatal ailment which ere now has been known to kill persons who had been bitten by animals perfectly free from rabies. Three months passed, during which Crosse enjoyed his usual health. At the end of that time, however, he felt one morning a severe pain in his arm, accompanied by severe thirst. He called for water, but "at the instant," he says, "that I was about to raise the tumbler to my lips, a strong spasm shot across my throat; immediately the terrible conviction came to my mind that I was about to fall a victim to hydrophobia, the consequence of the bite that I had received from the cat. The agony of mind I endured for one hour is indescribable; the contemplation of such a horrible death—death from hydrophobia—was almost insupportable; the torments of hell itself could not have surpassed what I suffered. The pain, which had first commenced in my hand, passed up to the elbow, and from thence to the shoulder, threatening to extend. I felt all human aid was useless, and I believed that I must die. At length I began to reflect upon my condition. I said to myself, 'Either I shall die or I shall not; if I do, it will only be a similar fate which many have suffered, and many more must suffer, and I must bear it like a man; if, on the other hand, there is any hope of my life, my only chance is in summoning my utmost resolution, defying the attack, and exerting every effort of my mind.' Accordingly, feeling that physical as well as mental exertion was necessary, I took my gun, shouldered it, and went out for the purpose of shooting, my arm aching the while intolerably. I met with no sport, but *I walked the whole afternoon, exerting at every step I went a strong mental effort against the disease.* When I returned to the house I was decidedly better;

[a] August, 1879. P. 158.

I was able to eat some dinner, and drank water as usual. The next morning the aching pain had gone down to my elbow, the following it went down to the wrist, and the third day left me altogether. I mentioned the circumstance to Dr. Kinglake, and he said he certainly considered I had had an attack of hydrophobia, which would possibly have proved fatal had I not struggled against it by a strong effort of mind."

This aspect of hydrophobia is thus alluded to by Sir Thomas Watson:[a]—"You will be surprised when I tell you that some persons have made it a question whether there is, or ever was, any such disease at all. I have known such. The late Sir Isaac Pennington, who was Regius Professor of Physic at Cambridge, had never seen a case of hydrophobia, and nothing could persuade him that anyone else had seen anything more than a nervous complaint produced by the alarmed imagination of the patient, who, having been bitten by a dog reputed to be mad, and having the fear of feather-beds before his eyes, was frightened into a belief that he had hydrophobia, and ultimately scared out of his very existence. Now if you meet with such incredulous persons, and think it worth your while to argue the point with them, you may object to their unbelief, the improbability that so many persons who have been bitten by mad dogs should have suffered so precisely the same train of symptoms, and at last have died from the mere force of a morbid imagination. You may urge them with the fact that many of these persons have been under no apprehension at all until the disease has seized upon them; that many, also, have been men of naturally strong and firm minds,[b] not at all likely to be frightened into believing that they were seriously ill unless they really were so, and still less likely to be terrified into their graves. And if this have no weight with such reasoners, you may bring forward the conclusive facts that the disease has befallen infants and idiots, who had never heard or understood a word about mad dogs or hydrophobia, and in whom the imagination could have had no power in calling forth the complaint. And if they are proof against this, you must give them up; I can suggest nothing more."

[a] Lects. Pract. Physic. Vol. I., p. 602.

[b] *E.g.*, the Duke of Richmond, who died in Canada, in 1819, of hydrophobia from the bite of a fox, and who in 1789, when Col. Lennox, in a duel shot the whisker off the Duke of York, son of George III.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

PROCEEDINGS OF THE DUBLIN OBSTETRICAL SOCIETY.

FORTY-FIRST ANNUAL SESSION.

EDWARD B. SINCLAIR, M.D., President.
WILLIAM ROE, M.D., Honorary Secretary.

Saturday, June 14, 1879.

E. B. SINCLAIR, M.D., President, in the Chair.

Exhibition of Specimens.

DR. ATTHILL exhibited a calculus larger than a pigeon's egg which he had that morning removed from a patient in the Rotunda Hospital after dilatation of the urethra, effected by means of Weiss's dilator.

DR. ATTHILL exhibited a mass which he had likewise removed from the body of a patient in the Rotunda Hospital. It was a specimen of ovarian cystic disease co-existent with fibro-cystic disease of the uterus. The woman came under his care about a year ago with a large fluctuating tumour in the left iliac region, and a large solid mass in the right iliac region. There was a sulcus between the two, and the diagnosis was obscure. The patient was seen by Dr. Kidd and others. He (Dr. Atthill) arrived at the diagnosis that there were two distinct diseases, namely—ovarian cystic disease on the left side and a fibrous tumour on the right. He tapped the ovarian cyst, and drew off a considerable quantity of fluid in November last. This was followed by great relief. When the cyst was emptied the mass which lay on the right side became more and more apparent, and it was plain that it was fibrous disease of the uterus. He decided not to operate, because—in consequence of the double disease and the enormous mass to be removed—it was improbable that the patient would have survived an operation. She got relief after tapping, left the hospital, and resumed her duties as a cook. After two or three months she came back, and was readmitted in March last, nearly though not

quite as large as before, and suffering horrible pain. The mass had entered the iliac region, was partially adherent to the wall, and had increased so much in size that there was some doubt as to whether it was malignant or not. She died two days previously, and a specimen of the tumour was before them. The following was a note of the autopsy :—

Post mortem.—"Twenty-three hours after death rigor mortis well marked. The body was very emaciated, and the glands in the groin were enlarged. *Thorax.*—Caseous degeneration of lungs, clots in right auricle and ventricle of heart, thickening of mitral valve, and contraction of orifice. *Abdomen.*—On opening the abdomen there was found a large mass filling up the whole of the lower part of this cavity, which consisted of a number of cysts on left side, "one of which sprung from the left ovary, and was as large as a child's head," and a solid tumour apparently springing from the wall of the uterus to the right. The whole of this mass was firmly adherent to the surrounding structures. It had displaced the bladder to the left. The right kidney was very small, and its pelvis was enormously dilated. The whole course of the ureter of the same side was dilated—so much so as to be mistaken at first for a coil of the small intestine. The left kidney was very much enlarged, with its pelvis and ureter also dilated. The capsule of the kidneys peeled off readily, and it was thickened. The cyst was ovarian. The uterus was visible, with the large fibro-cystic mass which was diagnosed during life. The case was interesting as showing the occurrence of two distinct diseases—ovarian cystic and fibro-cystic—in the same patient.

Case of Ovarian Tumour obstructing Labour. By Lombe Atthill, M.D.; Master of the Rotunda Hospital, Dublin.

The existence of an ovarian tumour concurrently with pregnancy is not a very rare occurrence, but the tendency in all such cases is for the tumour to be pushed up by the uterus, as that organ rises out of the pelvis, and, consequently, though the patient may suffer great inconvenience, or even distress, from over-distension of the abdomen, still it is not uncommon for a pregnant woman who may be the subject of ovarian cystic disease to go to the full term of pregnancy, and to be delivered without difficulty. Two such cases have come under my own observation.

In a few comparatively rare cases the tumour, instead of being pushed upwards by the uterus as it enlarges, falls down into Douglas' pouch. This can only happen before the uterus attains sufficient size to fill the brim; and if the existence of an ovarian tumour in that situation be not detected till some time after the occurrence of the accident, it may be impossible to displace it, and it may become a serious obstacle to the descent of the fœtal head. The tumour in these cases lies in the hollow

of the sacrum and possibly may fill the whole pelvic cavity. Such cases are described by all recent writers on obstetrics, and diagrams illustrating this position of the tumour are given by Barnes, Leishman, and others, but they do not give the details of any cases.

Smellie records a case (No. 67)—not seen, however, by himself—in which labour was obstructed by a tumour which so nearly filled the pelvis that the attendant "had scarce room to introduce one or two fingers betwixt it and the pubes."[a] This, probably—as pointed out by Dr. M'Clintock, in his note on the case—was an ovarian tumour; and Dr. M'Clintock in the same place records the particulars of a case in which an ovarian tumour, "somewhat bigger than a turkey's egg, was felt behind and to the left side of the vagina," in a woman under his care in the Rotunda Hospital. He succeeded, after a protracted labour, in delivering her with the forceps. In the case I am about to relate the conditions present were materially different, and, so far as I am aware, none presenting exactly similar conditions are recorded.

The patient was a very healthy, well-made young woman. Labour set in at about 5 a.m. on the 24th May, but, the pains being only slight, I was not sent for till 4 p.m. On examining her I found a very unusual condition to exist. A large bag of waters nearly filled the vagina. This, during a pain, was felt to be constricted above by the os uteri, which was more than half dilated. The presentation could not be made out. Behind the cervix an oblong mass could be felt extending from the iliac synchondrosis on the one side to that on the other. It did not give to the finger the impression of being a tumour, but rather as though a firm pad, the thickness of the arm at the wrist, had been wedged in all along the crest of the ileum, between the uterus and pelvis. At first I was quite at a loss to decide what this could be, but, hoping that it might be due to a fæcal accumulation, I administered an enema, which, however, while it produced a copious evacuation, failed to effect any alteration in the size, shape, or position of this remarkable swelling. I now ruptured the membranes, and, passing two fingers into the vagina, found that the head presented. The occiput rested on the pubes, and the forehead being lower was pressed firmly against the cervix posteriorly, which, in its turn, was wedged against the mass I have described. I could not by this examination make out anything more than I have already stated; the lower segment of the uterus being firmly wedged in between the pubes and the swelling preventing my doing so. I now came to the conclusion that I had to deal with an ovarian tumour which, probably—the pelvis being large—had descended partially below the brim during the early stages of pregnancy—at a time, however, when the uterus was too large to permit of its descending lower, and that the tumour had become fixed in that position by the pressure of the uterus as it increased in size. I

[a] Smellie's Midwifery. Edited by A. H. M'Clintock, M.D. Vol. II., p. 107.

could not suppose that it had got into its present position at a late period of utero-gestation. I arrived at the conclusion that it was an ovarian tumour mainly because any other explanation of the formation of so large and firm a mass in the situation I have described would have given rise to symptoms which were altogether wanting in this case. Hæmatocele or cellulitis might possibly have produced a somewhat similar swelling; but had it been due to either of these causes, symptoms indicative of such serious affections must have been present. Such, however, were altogether wanting.

Having arrived at the conclusion that I had to deal with an impacted ovarian tumour, I lost no time in endeavouring to dislodge it. With this intention I placed the patient in the elbow-knee position, and introduced two fingers into the vagina and made steady pressure upwards on the tumour; but the lady, though very patient, could not bear the pain thus caused, and I was obliged to desist; and the pelvis being roomy, and there being no urgent symptoms present, I determined to wait and see what nature could effect. I accordingly allowed four hours to elapse, at the end of which time, no advance whatever having been made, the pulse having risen from 80 to 100, and the patient complaining of being much exhausted, I determined to interfere. I explained the nature of the case to the friends, and pointed out that if I failed to push the tumour up out of its present position the case would assume a serious aspect.

I now brought the patient under the influence of chloroform—pushing it to the surgical degree—and then introduced my whole hand into the vagina and made firm pressure on the tumour, and soon had the gratification of finding it slowly to glide upwards and disappear. The head now came down on the os, which, though not fully dilated, was soft and yielding. I therefore thought it best not to leave the patient longer undelivered, and, without withdrawing my hand, applied the long forceps, and easily extracted a living child.

For two or three days subsequently I felt much anxiety about this patient; her temperature rose to 103°, pulse 120; she also had a rigor and much tympany—evidently she had a slight attack of peritonitis; but these symptoms gradually subsided, and she made a perfect recovery.

The tumour is now easily felt in the abdomen. It lies in the left inguinal region, and is apparently the size of the fœtal head at full term. The patient is still under my observation, and will, I fear, before very long, experience inconvenience from the presence of this tumour, for my experience of ovarian cysts which exist coincident with pregnancy is, that they increase rapidly after the pressure caused by the pregnant uterus is withdrawn.

Dr. Smyly read the following Clinical Report of the Rotunda Hospitals :—

Report and Clinical Records of the Rotunda Hospitals for the Year ending 5th November, 1878. By Lombe Atthill, M.D., Master of, and William J. Smyly, M.D., Assistant-Physician to, the Hospitals.

The total number of patients delivered in the various departments of the Hospital during the year ending 5th November, 1878, is as follows:—

Delivered in Lying-in Hospital, - - -	1,179
„ „ extern maternity, - - -	860
Admitted into auxiliary hospital, - - -	398

Of the 1,179 patients delivered in the Lying-in Hospital, 446 were primaparæ. The number of cases in which the ovum was expelled before the seventh month of pregnancy amounted to 63. The other cases which deviated from the natural course were as follows:—

In 13 the child was expelled, face towards the pubes.
„ 1 the face presented.
„ 40 the breech or lower extremity.
„ 2 the shoulder or arm.
„ 86 the forceps was applied.
6 were delivered by version.
In 2 the head was perforated.
„ 1 the fœtus was decapitated.
„ 3 premature labour was induced.
21 were cases of twins.
6 „ „ of prolapse of funis.
4 „ „ of accidental hæmorrhage.
1 was a case of placenta prævia.
30 were cases of *post partum* hæmorrhage.
1 was a case of secondary hæmorrhage.
1 „ „ of rupture of uterus.
5 were cases of convulsions.
3 „ „ of mania.
9 „ „ of rigid os.
11 „ „ of retained placenta.

THE FORCEPS.

83 women were delivered with the forceps—that is, about 1 in 14—of whom 3 died. The instrument was, however, applied in 86 cases, but in three it was subsequently removed—once because the cervix was so rigid that, after it was applied and locked, it was not considered safe to employ traction. This woman (see Case III.) was subsequently delivered by the natural efforts, and made a good recovery. The other two were

breech cases, in which it was applied to the after-coming head, but failing to complete delivery, this was finally accomplished in one by the unaided finger—in the other by the perforator and cephalotribe.

The instrument which we almost invariably use is Barnes' long double-curved forceps. Tarnier's was used on two occasions, and the short forceps three times, but merely for teaching purposes. The objections to the former were fully stated in the last Report, and need not be recapitulated. It was, however, a curious fact that in both instances in which it was employed this year, the child was extracted face to pubes; it did not, therefore, apparently facilitate in any way the rotation of the face towards the sacrum.

The forceps was applied ten times where the os uteri was not fully dilated. In one case, as already mentioned, it was removed again without employing traction; in another case the cervix was ruptured, and peritonitis supervened. This was the only death among them. The following are some of the more interesting forceps cases:—

Tedious Labour; Rigid Os; Forceps.

Case I.—E. C., aged twenty-three, was admitted into hospital at 3 a.m., on May 11th, having been about twenty hours in labour. The membranes had ruptured the previous day, and the patient seemed much exhausted from protracted efforts at "bearing down." The os was about half dilated, and very rigid; a large scalp tumour could be felt on the fœtal head; the vagina was hot and dry. Warm baths, chloral, and opium were tried repeatedly during the day. At 10 p.m., the patient having been chloroformed, the forceps was applied; os three-fourths dilated. The cervix offered considerable resistance, and some blood flowed with the first efforts at traction. A small thrombus formed at the posterior fourchette as the head was coming down upon the perinæum, which was incised laterally to avoid the danger of laceration. The child was still-born. Convalescence was uninterrupted, and the patient went out on the eighth day.

Forceps; Peritonitis; Death.

Case II.—A. D., aged twenty-six, unmarried. Labour commenced on May 15th; the waters were discharged the same day. Came into hospital on the 16th, having been twelve hours in labour. The os was found to be the size of a shilling and very rigid. All the ordinary means of relaxing it were employed, but with very little effect. At midnight on the 17th (third day since escape of liquor amnii) the os was about the size of a florin, still very rigid; the vagina hot; tongue coated; pulse rapid; and the patient in great distress of mind. Chloroform was administered, and she was kept under its influence for twelve hours. At noon the following day (18th) the forceps was applied and

locked. No traction was applied for half an hour afterwards, as it was hoped the excentric pressure of the blades would expand the cervix sufficiently for the passage of the head. In fifteen minutes more it was drawn through the os, and was soon delivered without further difficulty. The entire time which elapsed from the application of the instrument until the birth of the child was fifty-five minutes. The child was born alive and lived for thirty-six hours afterwards.

19th.—7 p.m. Patient has suddenly become deeply jaundiced; groaning, and complaining of general distress, but no pain; respiration rapid; lochia suppressed; no milk. The perinæal laceration, which extends half way to the anus, is destitute of granulations and covered with a white membrane; the edges red and œdematous, and the discharge thin and irritating, excoriating the inner side of the thighs; labia œdematous. 10 p.m. Vomiting green matter; semi-comatose, with retention of urine.

20th.—Comatose; breathing quieter; pulse 110.

21st.—Profuse black vomiting, several pints of fluid being ejected. Coma very profound, with stertorous breathing. Death. (Third day.)

Autopsy.—Arborescent injection of the peritoneum, with deposit of recent lymph. The cervix uteri presented on either side a vertical laceration—that on the left extending into the vagina, and involving the peritoneum to the extent of about half an inch. Diphtheritic membrane on internal surface of uterus; vagina gangrenous; adhesion of left pleura.

Forceps Removed after Adjustment.

Case III.—T. O'N., aged nineteen, a primipara. Labour commenced about 4 a.m. on June 8th; she did not, however, come into hospital until noon the next day.

9th.—On admission the os was found to be about the size of a sixpenny bit, and the head could be felt through it, the waters having previously escaped. Her pains were apparently very severe, but had not much effect on the os, which felt hard and rigid; she passed a very restless night in spite of an anodyne draught.

10th.—Os was about the size of a florin, still hard and undilatable. The day and night were spent very much as those preceding had been.

On the morning of the 11th, very little progress having been made, chloroform was administered and the forceps adjusted and locked, but so firmly and rigidly did the cervix surround the blades that it was not thought safe to employ traction, and they were accordingly removed; chloroform was withdrawn. The patient was again placed in a warm bath, the water of which was injected into the vagina. After a time matters assumed a more favourable aspect; the cervix softened and began to dilate. About 6 p.m. it was retracted over the head, and the child was shortly afterwards expelled alive by the natural efforts.

Face Presentation; Barnes' Forceps.

Case IV.—This patient was sent into hospital from the country, an unsuccessful attempt having previously been made to deliver the child with short forceps. On admission the patient seemed very nervous and alarmed about her condition; her pulse was 104, tongue thickly coated, vagina hot, labia œdematous; child's face presenting in the first position; the os could no longer be felt. Barnes' forceps was applied and the child extracted alive without difficulty. The mother made a good recovery.

Arm Presentation; Decapitation.

Case V.—E. F. This girl, aged nineteen, was in labour with her first child; she showed many signs of syphilis, and stated that she was about six months pregnant, but feared the child was dead, as she had not felt its movements for several days.

Labour set in about noon on the 9th day of December, and she came into hospital the same evening. On examination the os was found about the size of a sixpenny-piece, and the presenting part was diagnosed as an elbow. At 11 30 p.m., the os being pretty well dilated, an arm prolapsed, which proved to be the left, in an advanced stage of decomposition. The fœtus being evidently very small and putrid, labour was allowed to proceed in the hope that it might be spontaneously expelled; this did not occur, however, but the presenting part was gradually forced lower in the pelvis, until at length it became firmly impacted; the pains began to get weaker, and the pulse increased in frequency. It was now considered necessary to complete delivery; and chloroform having been administered, an attempt was made to turn, but this could not be accomplished. The child was then decapitated by the aid of scissors and a blunt hook. The neck having been cut through, the body was immediately delivered by traction on the arm, and the head extracted with a crotchet. Patient went out well on the eighth day.

VERSION.

Version was performed six times—three times where the upper extremity presented, once where the funis prolapsed, once for placenta prævia, and once to deliver the second of twins.

INDUCTION OF PREMATURE LABOUR.

It was considered advisable to induce premature labour in three cases of extreme narrowing of the conjugate diameter of the pelvis.

Case I.—M. R., aged thirty, admitted into the hospital April 30th, 1878. This patient was sent up from the country to have labour induced. She had been married five years, and had already borne two children. Both were still-born—the first, being immature, was delivered by the natural efforts; the second, by the perforator and crotchet. She was at

the time of her admission in the eighth month of her third pregnancy; a low-sized woman, but in good health. In order to facilitate a thorough exploration of the pelvis she was brought under the influence of chloroform. It was then found that the sacral promontory bulged forward so as to encroach on the pelvic space to a degree which was considered incompatible with the birth of a fully-developed fœtus.

May 1st.—A gum-elastic catheter was introduced through the os, and pushed upwards between the uterine wall and the membranes; in doing this, however, the latter were unfortunately ruptured, and a quantity of liquor amnii escaped.

2nd.—Patient passed a quiet night; no sign of uterine action; two pieces of laminaria introduced.

4th.—Matters being still *in statu quo*, an attempt was made to introduce one of Barnes' bags, but unsuccessfully; a sponge tent was introduced instead. Pains set in about 8 o'clock p.m., and continued during the night.

5th.—Tongue coated; pains strong; os rigid; got a warm bath. Towards afternoon vomiting set in, with great pain in the abdomen; the discharge became yellow and offensive.

6th.—Had passed a quiet night; slept well after taking an anodyne draught; the os was still as small as a sixpence, and rigid; was again placed in a warm bath. Whilst in the bath had a very severe rigor. Being removed to bed, she was given chloral and opium; the os relaxed and rapidly dilated, and at 2 15 o'clock p.m. the child was born. It was a female, 5 lbs. 12 oz. in weight, dead and putrid. An hour having elapsed, and all efforts to express the afterbirth failing, the hand was introduced, and it was found adherent to the uterus. When removed it was found in a state of commencing decomposition. The uterus was then thoroughly syringed out with a solution of permanganate of potash in hot water (110° F.) In the evening the abdomen was hard and tympanitic, but neither painful nor tender; pulse 120; temp. $103\frac{3}{4}°$.

7th.—First day after delivery; had a good night. Towards evening the abdomen became painful and tender; tongue very foul; pulse 130; temp. 104°; discharge dark in colour and very offensive. Uterus to be syringed twice a-day with carbolic acid, and to take quin. sulph. gr. v. ter die.

8th.—Bowels were freely moved; tongue cleaner at the edge; icteric tint of skin and conjunctiva; pulse 116; temp. 102°. 1 p.m.—Has had slight rigors all day; resp. 52; dyspnœa; pulse 140; temp. 105·8°. Quinine doubled—*i.e.*, gr. x.

9th.—Pulse 140; temp. 103·8° in the evening (had fallen to normal in the morning); resp. 48, laboured; face flushed; looks anxious, but says she is not so, and feels well. Quinine increased to 15 gr.

10th.—Became maniacal and very noisy. Thornton's ice cap seemed

to have a very calming influence. 9 p.m.—Pulse very small and soft, 30; passing under her.

11th.—Diarrhœa ceased; lying in a kind of dozing state; pulse 100; temp. 105°; resp. 60. Does not recognise anyone.

12th.—Died at noon, but regained her consciousness before death.

Case II.—(Recorded by Mr. Scattergood, Clinical Clerk).—J. G., aged thirty-one, admitted 13th May. The patient had been married four years and borne two children—the first three, and the second two years ago. Both children arrived at maturity and were delivered with the perforator and crotchet. When admitted she was nearly eight months gone in her third pregnancy. After a careful examination of the pelvis it was determined to induce labour prematurely, and with this object Dr. Atthill passed a gum-elastic male catheter into the uterus and up to the fundus, between the membranes and the uterine wall, leaving the former unruptured. About 6 p.m. pains set in and continued all the night.

20th.—The catheter was removed at noon, and a sea-tangle tent introduced in its place; the membranes soon after ruptured, and the waters came away. 10 p.m. the tent was removed; os large enough to admit the top of the index finger. She spent a very restless night, being anxious and nervous, with a rapid pulse (148) and severe headache.

21st.—At the morning visit the os was still about the size of a sixpenny-piece; pulse 148. She was placed in a hot bath, where she had not remained many minutes before strong pains set in, and she had hardly got into bed again before the child was born. It was a female, and alive. Mother and child both did well.

Case III.—M. K., aged thirty-four, admitted September 11th. This patient came into the institution on purpose to have labour induced prematurely; she was at the time in the eighth month of her ninth pregnancy. Seven times previously the fœtus had been destroyed. Once only did she give birth to a living child, labour having set in prematurely about the seventh month; it survived its birth, however, but a few hours. On examination, narrowing of the conjugate diameter was detected, and it was determined to induce labour as in the former cases. Accordingly a catheter was introduced on the 12th instant, but as very little uterine action followed, it was removed after forty-eight hours, and the membranes ruptured. Next day os dilated gradually, though pains were weak, and at 10 p.m. it was considered advisable to deliver. The long forceps was applied, and the child, a living female, was extracted, but with a deep spoon-shaped depression towards the anterior margin of the right parietal bone. Mother and child went out well.

Placenta Prævia ; Version ; Craniotomy ; Death of Mother.

Case IV.—M. K., aged thirty-four; sixth pregnancy. A week before admission she had a severe attack of hæmorrhage, lasting about two hours; the blood was both fluid and in clots.

August 10th.—Hæmorrhage recommenced about six in the morning and continued until 5 30 p.m., when she was admitted into hospital. On examination the os was discovered as large as a florin and almost entirely covered by the placenta. This was separated from the cervical zone of the uterus, and the membranes ruptured. After this not only did the hæmorrhage entirely cease, but labour also was arrested, and for three days things remained *in statu quo*.

On the 13th the discharge was most offensive, the pulse rose to 130, and temperature to 104°. Barnes' bags were introduced, and the os sufficiently dilated to deliver. This was attempted by version, but after the birth of the body and arms, the head could not be brought through the brim. The forceps was tried, but failed; and the child being evidently lifeless, the head was perforated behind the ear, and crushed with the cephalotribe. There was some hæmorrhage during extraction, but none afterwards; the pulse was very weak throughout. Afterwards she was given beef tea and brandy freely; morphia, injected hypodermically, gave her a quiet night's rest; pulse 115.

14th.—Towards evening vomiting set in, but was checked by morphia, after which she slept.

15th.—Vomiting set in again; pulse rapid and weak; discharge very offensive; died at 11 p.m.

POST PARTUM HÆMORRHAGE.

There were thirty cases of *post partum* hæmorrhage, some of which were of an alarming nature. The use of hot water in the treatment of this complication was very frequently employed both in the hospital and extern maternity, and has proved eminently satisfactory. It has, indeed, much to recommend it, for not only is it a powerful hæmostatic and excitant of uterine contraction, but it is also a general stimulant. If used with ordinary care it is not only harmless, but beneficial, by thoroughly cleansing the uterus from clots, portions of membrane, &c., which may have been left in its cavity; and, what is a matter of great importance, it is always at hand when wanted. It will not, we are of opinion, be found altogether to displace the use either of cold water or of the perchloride of iron, but rather to be applicable to a distinct class of cases, in which the former of these remedies would be unsuitable, and the latter unnecessary.

Dr. Atthill was first induced to try the use of hot water in the treatment of uterine hæmorrhage, in the earlier part of the time embraced in this Report, in consequence of a letter written by Dr. Whitwell, of San

Francisco, to Dr. Foley, of Boston, who was at the time studying in this hospital. Dr. Whitwell's statement was to the following effect:[a]—When House-Surgeon to the New York State Woman's Hospital, in the year 1874, he found the uterus contract firmly and instantly upon being washed out with hot water, after an operation by Dr. Marion Sims upon a sarcomatous growth of the fundus uteri. The result led him to try the same treatment in *post partum* hæmorrhage, where he met with perfect success. He afterwards succeeded in having the treatment tried in the Lying-in Hospital at Prague, where he studied for some time. At first he was ridiculed, but as the method was successful in every respect, it was adopted as a regular routine treatment.

The method of carrying out the practice is exceedingly simple. An ordinary syphon syringe is the only instrument required, though we now use one with a long vulcanite nozzle specially constructed for vaginal and intra-uterine injection. This is carried up to the fundus, and, with the usual precautions against injecting air, and securing a free return, we inject water as hot as can be conveniently borne by the hand—*i.e.*, about 112° F.—in a full stream into the cavity, continuing thus until a good contraction is secured, and the water returns quite clear and colourless.

The following are some of the results of our experience in the use of hot water :—

1st. In cases of sudden and violent hæmorrhage in a strong and plethoric woman, it is better first to use cold.

2nd. Where from the prolonged or injudicious use of cold, the patient is found shivering and depressed, the beneficial effect of injecting hot water is rapid and remarkable.

3rd. In nervous, depressed, and anæmic women, hot water may at once be injected, without previously using cold.

4th. In cases of abortion, where from uterine inertia the ovum, although separated from the uterine wall, is wholly or in part retained, the injection of hot water is generally followed by most satisfactory results.

5th. Where the injection of the perchloride of iron is considered necessary, previous injection of hot water clears the uterus of clots, &c., permitting the fluid to come directly in contact with the bleeding surface, and lessening the chance of septic absorption.

The following cases will illustrate its effects :—

Case I.—E. D., aged twenty-four. Labour was tedious, and completed finally with forceps; afterwards there was some sharp *post partum* hæmorrhage, which was temporarily arrested by cold and ergot. The uterine contraction was not, however, satisfactory, and more or less draining continued for some time after delivery. Hot water was at length injected, and was followed by firm and permanent contraction.

[a] Reported already by Dr. Atthill.

Uterine Fibroids ; Post Partum Hæmorrhage ; Hot Water Injected.

Case II.—S. S., aged twenty-nine; primipara. Labour was very tedious, owing to inefficient uterine action—delivery being at last effected by the forceps. The uterus was then found to be thickly studded with fibroid tumours, most of which seemed to be subperitoneal. The womb did not contract satisfactorily; and, rather severe hæmorrhage occurring, the placenta was immediately expressed, cold napkins applied to the vulva and sacrum, and friction employed over the fundus to induce contraction of the uterus. These means were not, however, sufficient; and, hæmorrhage still continuing, it was determined to try the value of hot water without first having recourse to cold. It was accordingly injected in a full stream, and with the most satisfactory result.

Prolonged Use of Cold Water ; Successful Injection of Hot Water.

Case III.—M. H., aged twenty-seven; fifth confinement. This patient had had hæmorrhage after former labours. On this occasion the process proceeded naturally and rapidly until after the birth of the infant; but some hæmorrhage preceded the expulsion of the placenta, which was accompanied by a quantity of blood and clots. The flooding now became considerable. The pupil in charge of the case summoned the assistant physician, and in the meantime tried to check the hæmorrhage with cold water, which he not only injected into the vagina and uterus, but also poured from a height upon the abdomen. The patient was found at about four o'clock on a raw spring morning with her bed and linen saturated with cold water, depressed and shivering, with blanched face, and small, feeble, and rapid pulse—135 per min. A small stream of blood was still flowing from the vulva; the uterus being relaxed and distended, a quantity of clots were expelled by friction and pressure, and hot water immediately injected. There was no more hæmorrhage, and when the bed-linen had been changed and a hot jar applied to her feet, the patient expressed the greatest satisfaction; her pulse had fallen to 115. She had subsequently an attack of pleurisy with effusion, but finally made a complete recovery.

The following illustrates the use of hot water in cases of abortion:—

Case IV.—B. D. was attended at her own home. The fœtus came away on January 4th, and was apparently of four months' growth; the placenta was retained, and there was considerable hæmorrhage. She came into hospital two days after, and on examination the os was found patulous, and the placenta could be felt through it; all attempts to remove it with the finger, however, failed. There was still a profuse discharge, and the patient appeared weak and anæmic. Hot water was injected, with the effect of immediately stopping the hæmorrhage, uterine action set in, and the placenta was expelled five hours after.

Severe Post Partum Hæmorrhage; Failure of Hot Water; Injection of Liquor Fer. Perchlor.; Recovery.

Case V.—M. M., aged thirty; second pregnancy. In this case the breech presented, and the funis prolapsed with the escape of the waters; as no pulsation could be felt in it, labour was allowed to proceed, a putrid female child being finally expelled by the natural efforts. The placenta came away in twenty minutes, and the uterus being firmly contracted, the binder was adjusted. Two hours after delivery violent hæmorrhage set in; cold napkins were applied to the vulva, friction to the fundus, and ergot injected hypodermically; cold water injected into the uterus, which failing, hot water was injected, and spt. terebinth. ʒss. given by the mouth. As the womb, however, still continued flaccid, the hand was introduced and a quantity of clots removed; at length the uterus contracted, expelling the hand. This favourable result was, however, only of temporary duration, for it again relaxed, and hæmorrhage recurred as briskly as ever. The patient was now becoming weak and faint, with a pulse of 185 beats a minute. It was now determined to inject the perchloride of iron. The hand having been again introduced to remove any clots which might have formed in the cavity of the uterus, it was thoroughly washed out with hot water, and about eight ounces of the styptic solution slowly injected. Hæmorrhage immediately ceased, and the patient made an excellent recovery.

Post Partum Hæmorrhage; Injection of Perchloride of Iron; Death of Patient.

Case VI.—M. H., aged twenty-three. This woman, who was married to a soldier, had been for some time in bad health attending the out-patient department, but previous to admission into the hospital was so ill that she was unable to leave her bed. When first seen she was very feeble and anæmic, and presented many well-marked symptoms of tertiary syphilis, which disease she said she had acquired two years previously; she also stated that this was her second pregnancy, having previously given birth to an immature and putrid fœtus, and that she feared this child was also dead, as she had not felt its movements for about three weeks. On examination she was found to be already in the second stage of labour, the head presenting. Shortly afterwards the child was born, dead and putrid as predicted. About twenty minutes after this, the placenta not having come away, the pupil in attendance sent for assistance. The uterus was found enormously distended, almost filling the abdomen. On pressure being made, a quantity of blood and clots were expelled with the placenta; cold water was injected into the uterus, but failing to cause contraction it was immediately followed by hot. Ergot and sulphuric ether were at the same time injected hypodermically, after which the

womb contracted firmly, but the general symptoms were very alarming—the pulse could not be felt at the wrist, the patient became very restless, endeavouring to sit up, crying out that she would smother, that all was dark around her, she could see nothing. The foot of the bed was immediately raised, and the pillow taken from under her head. At this critical juncture the uterus again relaxed and hæmorrhage recurred. The solution of perchloride of iron was procured, but before it could be injected a violent convulsion came on. The case now appeared to be desperate; nevertheless, as a *dernier ressort*, the styptic was resorted to. The tube of a syringe was passed up to the fundus, and about six ounces of the fluid injected. The uterus did not contract; respiration immediately ceased, and she was dead. About forty-five minutes elapsed between the birth of the child and the death of the mother.

Autopsy.—There was general thrombosis throughout the entire venous system; none of the solution had, however, entered the fallopian tubes or the peritoneal cavity.

PUERPERAL ECLAMPSIA.

There were five cases of convulsions, in two of which the attacks did not come on until after delivery, the patients in both cases recovering; the other three are recorded below.

Case I.—(Reported by Dr. J. C. Cameron, Montreal.)—F. D., aged nineteen, admitted into the lying-in ward at 2 45 p.m. on Tuesday, November 20th, 1877. On admission she was quite unconscious; in violent clonic spasms; face flushed; pupils widely dilated; pulse 130; resp. 30; temp. 101·4°; the os was about two-thirds dilated, the head presenting in the first position and well down in the cavity.

Previous History.—She had always enjoyed excellent health; had never noticed any puffing of the face or of the upper or lower extremities. She has been married for fifteen months, and has had one abortion at the third month. Labour commenced at about 11 p.m. on Monday, the 19th; the next morning, shortly after 7 o'clock, she complained of dizziness and inability to see objects in the room, and became quite unconscious, and at 7 30 the first convulsion came on. She was seen by one of the pupils of the hospital at 10 30, and was then in her fourth convulsion and perfectly unconscious; the os was at that time dilated to about the size of a sixpence. She now passed rapidly from one convulsion into another till she was brought to hospital.

Treatment and History.—The administration of chloroform was begun at 3 p.m., the patient being in a severe tonic spasm. After a few deep inspirations the rigidity began to relax, and in a few minutes she was completely under the influence of chloroform. Contraction of the voluntary muscles did not return as long as she remained under chloroform,

but at intervals of every four or five minutes until after the extraction of the child a peculiar gasp or sneeze, or rather a succession of sneezes occurred; these ceased as soon as the child was delivered. At 3 20 a catheter was passed, but no urine was found in the bladder. The forceps was then applied, and at 3 40 she was delivered of a living female child. During extraction the pulse rose to 160, and became very feeble; but immediately after the birth of the child it fell to 110 and improved in volume. A hypodermic injection of ergot was administered when the head was distending the perinæum, and at 3 50 the placenta came away. Chloroform was stopped, and in ten minutes a convulsion occurred. Chloroform was re-administered immediately, gr. x. of chloral injected hypodermically. On admission ol. tig. gt. 1 and calomel gr. v. had been placed on the tongue, but without effect; half an hour after delivery a turpentine enema produced a free evacuation. Convulsions returned at 4 18, 4 26, 4 45, 5 15, and spasms at longer intervals until 8 p.m., when the last, which was a very slight one, occurred. After this she became somewhat restless, and moaned and tossed about. As she could now be made to swallow, a mixture containing potassium brom. and chloral hyd. āā gr. x. in each dose was ordered to be given every half hour until she had taken a drachm of each salt. At 10 30 about 1 oz. of urine was drawn off by a catheter; on examination this was found to contain about half its bulk of albumen, and a small number of hyaline casts, some of them containing granular matter. Neither granular nor epithelial casts nor epithelium could be found. At 10 45 two drops of croton oil were administered, and during the night she had several copious, watery evacuations. A hot linseed and mustard poultice was applied to the loins, and renewed at intervals.

21st.—At 10 30 a.m. she seemed for the first time to notice objects, and answered correctly in monosyllables when questioned, and thenceforth her faculties seemed gradually to brighten. She made a good convalescence.

Child.—The child when born was very puny and feeble, and very great difficulty was experienced in establishing respiration. Every expedient usually resorted to was faithfully and perseveringly employed, and at the end of two hours an occasional slight gasp was the only sign of life. Artificial respiration was kept up for nearly five hours before natural respiration was fairly established. The child lived about twenty hours, and died on its way back to hospital from the church where it had been taken to be christened.

Case II.—(Also reported by Dr. Cameron.)—C. M'G., aged nineteen, primipara, unmarried, probably a prostitute, was admitted into hospital about 11 30 a.m. on 3rd December, 1878, apparently suffering from extreme intoxication. A strong ethereal odour was very evident

on her breath; her face was flushed and bloated. She behaved in a very violent, abusive manner, and was with difficulty undressed and put to bed. She was partially sensible, and answered questions about herself when she pleased. Her friends having said nothing about her having had convulsions, and the most natural conclusion being that she was drunk, an emetic and a dose of ol. tig. were administered, both of which acted satisfactorily. She was then allowed to remain quiet, and was disturbed as little as possible.

History.—She is a powerful, well-developed, stout, short-necked girl, of rather a bloated appearance. Has never borne children. Judging from her own appearance and from that of her relatives, she must have been addicted to the use of liquor. Her friends, when questioned afterwards, stated that labour began about 6 a.m., that she had a fit at that time, and another in the cab on her way to hospital. Nothing could be elicited from them as to her general health, or as to the existence of œdema, &c., before labour began.

On examination the os was found to be the size of a shilling; the membranes had ruptured previously. At 1 45 p.m. a severe convulsion came on. She passed rapidly from clonic to tonic spasms, became perfectly livid, and the peculiar hissing respiration so characteristic in these cases was specially well marked. The administration of chloroform was at once begun; the respiration became less and less hissing, but at the same time more rapid and shallow; the lividity extended from the face to the neck, breasts, and upper extremities; the pulse became quite imperceptible, and respiration ceased suddenly, three minutes after the inhalation of chloroform had commenced. Artificial respiration was immediately begun. Nélaton's method was used, and breathing was partially restored; venesection also was performed; but in spite of every effort the breathing gradually ceased, the heart became inaudible, the pupils dilated, and she was gone. As soon as it was evident that life was extinct, an incision was made in the middle line, the uterus opened up, and the child extracted without delay; the placenta was attached in front. In spite of every effort to establish respiration, the child, which was a full-sized healthy-looking male, never breathed, although after a ligature had been applied the cord feebly pulsated for some minutes.

Shortly before death about an ounce of urine had been drawn from the mother's bladder, and upon examination it was found to contain rather more than half its bulk of albumen, a few granular casts, a large number of blood and large hyaline casts, with granular matter imbedded in them.

Table of Deaths from all Causes.

No.	Date of Delivery	Date of Death	Ward	Bed	Age	No. of Pregnancy		Cause	Observations
	1877								
1	Nov. 13	Nov. 15	1	5	30	1	—	Phthisis - - -	Innupta; fretting; exhausted from excessive sickness during pregnancy; in advanced stage of phthisis.
2	Dec. 3	Dec. 3	8	84	19	—	2	Convulsions - -	Alcoholism; advanced Bright's disease.
	1878								
3	Feb. 2	Feb. 2	1	1	22	—	4	*Post part.* hæmorrhage	Much reduced by accidental hæmorrhage previous to coming into hospital.
4	Jan. 28	„ 6	6	66	27	1	—	Septicæmia - -	Fretting.
5	Feb. 7	„ 17	6	68	25	—	5	„ - -	In bad health for a long time; ten days confined to bed before admission, during which time had scarcely tasted food.
6	Mar. 5	Mar. 5	7	59	25	—	2	*Post part.* hæmorrhage	Syphilitic. In very bad health; had not left her bed for some days previous.
7	April 26	April 28	2	19	32	—	—	Pulmonary embolism	Chronic alcoholism; uncontrollable vomiting.
8	„ 24	May 2	8	85	30	—	4	Septicæmia - -	Extensive laceration of perinæum; some *post part.* hæmorrhage.
9	„ 28	„ 8	3	25	30	1	—	„ - -	—
10	May 6	„ 12	2 back	11	30	—	3	„ - -	Induction of premature labour.
11	„ 19	„ 21	1	2	26	1	—	Peritonitis - -	Innupta. Os rigid; labour very tedious; forceps; laceration of cervix.
12	„ 13	„ 26	5	47	19	1	—	Pneumonia - -	Innupta; fretting; suffering from bronchitis when admitted; catarrhal pneumonia supervened on sixth day; no abdominal or other symptoms.
13	Aug. 14	Aug. 15	2 back	11	34	—	6	Collapse - - -	Placenta prævia; version; craniotomy.
14	„ 28	Sept. 7	5	48	26	—	4	Septicæmia - -	Admitted threatening abortion; plugged; ovum removed entire; septic symptoms supervened.
15	Oct. 16	Oct. 19	5	47	34	—	11	Bronchitis - - -	Admitted with extensive pulmonary disease.

MORTALITY DURING CLINICAL YEAR.

Fifteen cases terminated fatally—that is, 1 in 78·6, equal to about 1·2 per cent.—in six of which there were evidences of septic absorption.

The deaths, classified as in former reports, stand thus:—

Class I.—Deaths directly traceable to the nature of the labour, six cases.

Class II.—Deaths resulting from or supervening on diseases contracted before admission into hospital, four cases.

Class III.—Deaths occurring in patients suffering from mental distress, three cases.

Class IV.—Deaths not traceable to any predisposing cause, two cases.

Class I.

Deaths directly traceable to the nature of the Labour.

Case I.—C. M., aged nineteen, unmarried, first pregnancy; was admitted on 3rd December in a state of intoxication, having had two attacks of puerperal convulsions. She died undelivered, during an eclamptic seizure, not long after coming into hospital. The child was immediately extracted by Cæsarean section, but did not survive (see p. 338).

Case II.—E. P., aged twenty-two; on admission she was in a very debilitated and exhausted condition from loss of blood; profuse hæmorrhage had set in with labour. She was advised to come into hospital, which she did, driving five miles into town, whilst profuse flooding continued all the way. She was delivered shortly after admission, severe *post partum* hæmorrhage following the birth of the child; perchloride of iron was injected with good effect. The patient, however, rapidly sank and died.

Case III.—M. H., a married woman, aged twenty-three, her second pregnancy; was in a wretched condition when admitted, having been confined to bed for days previously; was delivered of a putrid fœtus; profuse *post partum* hæmorrhage followed; perchloride of iron injected. Death of patient (see p. 336).

Case IV.—M. R., aged thirty; labour induced with difficulty, six days being occupied by the process; membranes were accidentally ruptured early in the process; the fœtus died, and was in a state of commencing putrefaction when born; placenta adherent. Died of septicæmia on the sixth day (see p. 330).

Case V.—A. D., aged twenty-six, unmarried, first confinement; labour very tedious; os rigid; chloroform for twelve hours; forceps applied. Death on third day (see p. 328).

Case VI.—M. K., aged thirty-four; sixth confinement; admitted August 10th. Partial placenta prævia; the membranes were ruptured,

and placenta separated from the cervical zone of the uterus. Third day after, fever having supervened, Barnes' bags were introduced; child turned; great difficulty in extracting the head, which was finally perforated. Death followed in thirty-six hours.

Class II.

Deaths resulting from or supervening on Diseases contracted before admission into Hospital.

Case I.—C. W., innupta, aged thirty, first confinement. On admission into hospital she was found to be in an advanced stage of pulmonary phthisis, and was evidently in a most desponding state of mind. She stated that her strength had been greatly reduced by constant vomiting during pregnancy, and this continued after delivery even to the hour of her death. Her labour occupied 14½ hours, during 5½ of which she was in the second stage. Labour was completed by the forceps—a male child, weighing 5 lbs., being extracted without difficulty. She survived 48 hours, during which time she suffered greatly from cough, dyspnœa, and constant vomiting. An hour before her death she suddenly became cyanotic, with a contracted pupil, passed into a state of profound coma, which ended in death. Autopsy revealed the ordinary appearances of pulmonary consumption in an advanced stage. The mitral valve of the heart was diseased and contracted, there was subacute gastritis, and an amyloid condition of the liver and kidneys. Nothing abnormal in connexion with the uterus or its appendages.

Case II.—M. J., aged twenty-five, admitted Feb. 7th. Had been in very bad health for some time, and for preceding ten days was unable to leave her bed, and scarcely tasted food. Labour was natural, lasting 7½ hours. On the third day she complained of feeling "pains in all her bones." Temperature 104°. On the fifth day she became maniacal, regained her reason the following day, but she lapsed into a low typhoid state, and died on the tenth day.

Case III.—M. F., aged thirty-two; had been drinking previous to admission on April 26. Her face was flushed; tongue thickly coated; constant vomiting, which continued 24 hours after delivery. Labour natural; child stillborn. On the afternoon of the second day she was suddenly seized with intense dyspnœa; respiration 35 in the minute; orthopnœa, cough, and bloody expectoration; pupils contracted; pulse very rapid, uncountable. Death very soon followed. *Cause: probably pulmonary embolism.*

Case IV.—J. S., aged thirty-eight; admitted 10th October, suffering from acute bronchitis; delivered of a premature (7 months) child on the 16th, after which the chest symptoms became greatly aggravated, and she died on the third day. *Cause of death: bronchitis.*

Class III.

Deaths occurring in Patients suffering from Mental Distress.

Case I.—M. B., aged twenty-seven, primipara; delivered Jan. 28; labour natural; was evidently in a state of great mental depression, constantly weeping. Though we could not discover anything of her history, we suspected that she was not married, since no one came to see her. On the third day she had a rigor, and her temperature rose to 104°; the lochia were suppressed, and no milk was secreted; the abdomen was tympanitic; septic symptoms gradually developed; the lungs became extensively engaged, and she died Feb. 6th (tenth day).

Autopsy.—A large gangrenous patch, the size of a two-shilling piece, was found on the vaginal wall; the interior of the uterus showed in places patches of the so-called diphtheritic membrane; ovaries contained numerous collections of pus. *Cause of death : septicæmia.*

Case II.—B. K., admitted April 24; delivered same day; labour natural, excepting a severe laceration of perinæum; *post partum* hæmorrhage followed, checked by the use of hot water. After delivery we found that she was fretting greatly about domestic affairs. On the 28th she had a severe rigor; temperature rose to 104°; very little milk or lochial discharge, but there were no abdominal symptoms. She fell into a low typhoid condition, and died 2nd May.

Case III.—M. M., aged nineteen, first confinement; the child was delivered with short forceps, labour being delayed by inertia in the second stage. This poor girl was unmarried, seduced, fretting greatly. She conceived the greatest hatred to her infant, which had to be removed lest she might destroy it. At the time of her admission she was suffering from acute bronchitis, which became much worse after delivery. On the sixth day the temperature rose to 105°, and the pulse to 128, with symptoms of catarrhal pneumonia, and she died. *Cause of death : pneumonia.*

Class IV.

Deaths not traceable to any predisposing cause.

Case I.—M. S., admitted April 27, aged thirty, first confinement; delivered naturally April 28th. On the third day face became flushed, with icteric hue of the whole body, and nervous depression. Next day there was some tenderness over the uterus, with tympany. May 6th.—Had a very restless night, continually rambling; breathing difficult and rapid; unable to expectorate; fæces and urine passing involuntarily; delirium. Fell into a low state, and died May 8th.

Autopsy.—An ulcer about the size of a sixpence was found just inside the cervix, and a portion of placenta attached to fundus; abdomen otherwise normal; chest not examined.

Case II.—M. D., aged twenty-five, married; admitted August 28th,

with symptoms threatening abortion, having reached the third month of her fourth pregnancy, and was in a very anæmic condition from loss of blood. The vagina was plugged soon after her admission, and when the tampon was removed the ovum came away entire. Septicæmia, however, supervened, and she died on the ninth day. *Cause of death : septicæmia.*

THE EXTERN MATERNITY.

The total number of poor women attended at their own homes during the year amounted to 860—a number unequalled in any former year. The abnormalities met with were as follows:—

85 cases of abortion.
2 „ of face presentation.
25 „ of breech, or lower extremity.
5 „ of hand, or upper extremity.
1 case of accidental hæmorrhage.
2 cases of placenta prævia.
19 „ of *post partum* hæmorrhage.
4 „ of adherent placenta.
7 „ of twins.
4 „ of prolapse of funis.
1 case of convulsions.
1 „ of labial thrombus.

Thirty-two were *forceps* cases, in three of which the os was not fully dilated.

Version was performed eight times—viz., five times for presentation of upper extremity, once for placenta prævia, once for prolapse of funis, and once for deformed pelvis.

Hot water was injected sixteen times in cases of *post partum* hæmorrhage and of abortion.

The perchloride of iron was twice had recourse to.

DEATHS.

Seven deaths were recorded—viz., two from phthisis pulmonalis, one from pyæmia, three from septicæmia, one from hæmorrhage.

Dr. Churchill said the Report contained a good many cases that were not quite satisfactory. There were three cases in which the forceps was applied when the os was undilated, or not fully dilated; and one case in which it was applied where the woman had been in labour for apparently a whole day, and the os must have been larger than a florin, but the cervix was so rigid that the instrument was withdrawn, and the woman was afterwards delivered on her own account. He would like to know why the forceps was applied at all in those cases. In the

second case in which the instrument was applied Dr. Smyly had omitted to say why it was done, but the application was followed by rupture of the cervix and death. Why was the instrument applied when the os was in such a state that rupture of the cervix followed? The os could not have been dilatable.

Dr. M'Clintock said that of the 1,179 patients who had been delivered in the hospital, 446 were primiparæ, and this circumstance alone was a most important factor in raising the rate of mortality. During Dr. Collins' Mastership of the Rotunda Hospital the proportion of primiparæ was 30½ per cent., and in his (Dr. M'Clintock's) Mastership the proportion was 37 per cent. Now in Dr. Atthill's time they found that the proportion was so high as 38 per cent. The Report mentioned the number of unmarried patients who had been confined in the hospital during the past year. It was well known that the rate of their mortality was far higher than that of married women. During his Mastership he ascertained that 127 seduced women had been delivered in the hospital, of whom 31 died, which was over 25 per cent. He did not think the rate of mortality given in the Report was at all high for a large hospital in a great city to which many bad cases were attracted, and where the proportion of primiparæ and of seduced females was so very large. The conclusion derived from a considerable collection of data in private practice amongst the better classes was that 1 death in 100 was about the average general mortality, and if that were so, 1 death in 78 or 80 was not high for an hospital. After the publication of a paper on this subject, read before the British Medical Association at Bath last August, he received a communication from Dr. Jamison, of Edinburgh, stating that during a practice of seven years, chiefly amongst the working classes, but not dispensary patients, he had 17 deaths out of 1,364 deliveries, which was exactly 1 death in 80. With respect to the extern cases attended from the Rotunda Hospital, it was a pity that the number of primiparæ amongst them had not been recorded. In 32 out of 860 extern cases the forceps had been used, being 1 case in 26, as against 1 case in 14 in the hospital. A record of the causes for resorting to the forceps in those cases would have been interesting. Amongst the patients treated at their own homes there were 7 deaths out of 860, which was exactly 1 in 123.

Dr. Macan said that the only statistics in connexion with hot-water injections for *post partum* hæmorrhage were those of Dr. Schrœder, of Berlin, who said that the hot water treatment along with subcutaneous injections of ergot superseded all others. The hot water counteracted shivering, and revived a sense of heat within, and it should be used as hot as could be borne. With respect to statistics of labour, the only fair principle of recording them was by saying that so many were attended and so many died. It only led to confusion to say that one died of

bronchitis and another came into the hospital in a low state of health. Private practitioners were in the habit of excluding all the cases they could in which particular diseases supervened. There were four cases in the Report which must be excluded from the mortality of childbirth. He did not believe in the truth of returns coming from certain French and London institutions which claimed a less rate of mortality for cases attended by students and midwives than for those attended by skilful practitioners.

Dr. Atthill, in reply to Dr. M'Clintock's friendly criticism, had only to say that they were obliged to avoid making the Reports too voluminous. With respect to Dr. Churchill's comments on the use of the forceps before the os was fully dilated, in one case the woman had been 37 hours in labour, of which 20 had passed before her admission into hospital, while the membranes had ruptured 12 hours before the use of the instrument. In another case the woman had been 40 hours in labour before the instrument was applied, and died subsequently, and it was a mere question as to whether they would apply the forceps or allow her to die undelivered. They chose the former alternative, and the child was born alive, but lived only 36 hours. That was one of the most anxious cases he ever had, and if it was not legitimate to apply the forceps in it he hardly knew a case in which that instrument should be applied at all. In the third case in which he used the instrument the woman was a primipara, and had been during the three preceding days in labour. He must say his experience of the use of hot-water injections in *post partum* hæmorrhage was most favourable. Undoubtedly it was not absolutely certain, and did not do away with the injections of styptics into the uterus; still he believed it was safe and in most cases efficient, and that it would gain ground every day. More especially it was invaluable in cases of abortion; the results of his experience of its uses in such cases were most favourable. In 25 cases in which he used it, it was most efficient. Amongst the list of deaths was one somewhat remarkable case of a woman who died of septicæmia after abortion. It was the first case of the kind he recollected in his practice. The forceps was used twice as often in the Lying-in Hospital as in the extern maternity. The great majority of the extern cases were women who had had one or more children. Out of 1,200 women who had been delivered in the hospital, he did not think more than 150 or 200 came back to them. No doubt a considerable number were deterred from coming into the hospital, because they did not like to leave their children at home. Last year the external mortality was relatively greater than that within the hospital.

Dr. Kidd said he had been struck by the large number of cases of *post partum* hæmorrhage that were mentioned in the paper. It seemed to him that some were described as cases of *post partum* hæmorrhage that in other hands would not have been so considered. As to hot-water

injections, their success in so large a number of cases was a fair proof of their value. He had had some little experience of the use of hot water in cases of *post partum* hæmorrhage, and had found it attended on the whole with very good effects. He had, however, also seen it fail. In one case in his private practice which Dr. Atthill saw with him, both hot water and perchloride of iron failed, and he lost his patient. Hot-water injection was most useful where the patient was cold, collapsed, and exhausted. Patients in that condition had told him that it was most comfortable. For many years, long before hot water was used for *post partum* hæmorrhage, he used cold water in cases of abortion when the membranes were retained after the embryo had escaped, and had found the effects good. He never used hot water under such circumstances. The *rationale* he presumed was that the cold water caused the uterus to contract; but even in a case of abortion, if the patient were exhausted, collapsed, and cold, in his opinion hot water might be used. On the other hand, if the patient were warm, her pulse good, and no great signs of depression existing, he was inclined to think that cold water would answer the purpose better. Certainly injections of water, either hot or cold, into the uterus were the most efficacious method of procuring expulsion of the placenta and membranes after abortion. It was a pity they had no means of defining what was *post partum* hæmorrhage.

Dr. Smyly said he might say for himself and his colleague, Dr. Duke, that they did their best to make the Master's book perfectly accurate. Every two or three months Dr. Atthill went over the book, and carefully compared it with the bed records. Mistakes and omissions occasionally occurred. With respect to the record of the external maternity it could not be perfectly reliable. The more careful the clinical clerk was in making the record, the higher the mortality was. One reason why the forceps was less frequently used in external maternity than in the hospital was that the external cases were let to run on sometimes to a very injudicious extent. With respect to hot-water injections, the general opinion appeared to be that they acted by contracting the uterus, but his own opinion was that the action was styptic. He admitted that he found a difficulty in distinguishing the cases of *post partum* hæmorrhage from those which were not, and therefore he put down every case in which there was any hæmorrhage beyond the slightest amount.

The Society then adjourned for the Session.

CLINICAL RECORDS.

MAGHERAFELT UNION HOSPITAL.—Under the care of DR. AGMON. B. VESEY. From Notes taken by MR. F. R. CASSIDI.

I.—COMPOUND COMMINUTED FRACTURE OF ARM—AMPUTATION—LABOUR TEN HOURS AFTER OPERATION—RECOVERY.

II.—COMPOUND COMMINUTED FRACTURE OF LEG—HÆMORRHAGE—TRAUMATIC DELIRIUM—"SPREADING GANGRENE"—AMPUTATION BELOW KNEE ON TENTH DAY AFTER INJURY—RECOVERY.

CASE I.—A woman, aged thirty-five, was admitted into this hospital in November, 1876, having had her left arm "shattered" up to above the elbow-joint in the rollers of a flax mill about eleven miles distant from the town, quite delirious, and in a state of extreme collapse from loss of blood. On examination she was found to be far advanced in pregnancy, though this she strenuously denied. Reaction having set in next morning, the limb was removed at the middle third by the ordinary circular operation, a flannel and calico bandage being used with considerable success as a substitute for the Esmarch bandage, it being important that as little blood should be lost as possible after the great depletion of the day before. No anæsthetic was administered. An opiate was at once given, but it was remarked by the nurse that soon after the operation she became extremely restless and excited, though she never gave any other indication of being in labour. At my evening visit she said she was doing well; her pulse was quiet, nor did she complain of pain. About two hours afterwards, however, she insisted upon getting out of bed, and was with difficulty restrained. It was then evident that she was in labour, and could not conceal the fact any longer, and at about 9.30 p.m. (ten hours after operation) she was delivered of a son, the patient lying on her back. The placenta came away soon afterwards. There was no hæmorrhage from the stump.

She made an uninterrupted recovery, and suckled her child. I may add that she has since told me that labour commenced immediately after the operation, and she was, consequently, ten hours ill. She also stated she was about two or three weeks from the full period of gestation.

CASE II.—George Patterson, aged twenty-one, by occupation a navvy, an anæmic and delicate-looking man, was admitted August 23, 1878, into the hospital, in a state of complete collapse, the result of shock and the loss of blood consequent on a comminuted compound fracture of both

bones of the left leg, caused by two railway waggons loaded with earth passing over the lower part of that limb just above the ankle. On examination splintered fragments of the tibia and fibula were found protruding from very extensive lacerated wounds, situated on the anterior and lateral parts of the leg, and higher up a deep punctured wound on the anterior aspect of the limb, and situated immediately over the junction of the upper and middle thirds of the tibia. A portion of his stocking was deeply wedged between the bones, and had to be removed about half an hour after his admission, owing to a severe hæmorrhage, arrested by the elevation of the limb and the application of tincture of iron and matico, a bandage and tourniquet. The collapsed state of the patient precluded any operative interference other than the checking of the hæmorrhage and placing the limb in a suitable splint; and as this state remained unaltered on the following day, save that retention of urine requiring catheterisation was present, it was resolved, in consultation, to wait and see what measures would ultimately be necessary—a delay further lengthened by violent and diffuse inflammation, which set in early on the third day in the injured limb, extending rapidly up to the trunk, accompanied by high fever and violent traumatic delirium, at times requiring several persons to keep him in bed, the limb at this time presenting a most formidable appearance, being enormously enlarged and disfigured by bullæ, which broke out all over the surface. This inflammation yielded in a remarkable manner to the exhibition of iron, the perchloride being painted over the whole surface of the limb, except over the bullæ, and being at the same time freely given internally. Flour dusted over the limb also gave considerable relief.

On the fourth day gangrene showed itself in the foot, gradually advancing up into the leg, especially in the posterior parts. The foot and portion of the leg up to the seat of fracture had remained at a low temperature from the first, though enveloped in wadding and surrounded with hot jars. Antiseptic dressings were freely used, and, finally, powdered charcoal—the punctured wound, which was terribly inflamed, being treated with poultices.

On the ninth day the man rallied slightly; and on the afternoon of the tenth day, in consultation with the late Dr. Morewood and Drs. Auterson and S. Morewood, it was resolved, as a last resource, to amputate just below the knee. The operation was performed, as agreed upon, without anæsthetics—the patient, who was almost in a state of syncope, being kept alive by frequent administration of stimulants. The method adopted was the ordinary circular, Esmarch's bandage having been first applied, but the great œdema of the thigh prevented the action of the tourniquet. The first incision gave vent to a large discharge of bloody serum and pus, the flow of which and the distended state of the limb rendered the dissection of the flap a work of considerable difficulty. Besides this,

except some trouble in securing the main artery, no serious impediment was met with—very little blood being lost and the operation a very rapid one. A suspicion of hardness, barely perceptible owing to the extreme distension of the thigh, gave rise to a dread of infiltration into the thigh, to prevent which a moderately tight bandage was applied from the body down, causing a steady flow of fluid from the face of the stump. The patient was put to bed in a cold and almost pulseless state, but under the application of hot-water bottles to the extremities and trunk he slowly revived, this state being succeeded in about two hours by high fever and a pulse varying from 130 to 140. On the day following the operation he was quiet and drowsy, and slept for a few hours towards evening, his recovery from this time being steady, though retarded by some unfavourable symptoms—notably a large pyæmic abscess which formed over the sacrum, causing great constitutional disturbance. This abscess, however, opened on the fifteenth day after operation, affording great relief and an immediate amelioration of his condition.

The ligatures came away on the eleventh day, and the patient was able to be up on October 1. The after-treatment was simple: full diet, beef, eggs, two glasses of whisky and three of wine every day, for the first week, then gradually diminished; tonics—especially compound tincture of bark, chlorate of potash, and carbonate of ammonia—a combination which agreed with him admirably—and sedatives; his bowels being always carefully regulated. A further complication arose about ten days after the operation—namely, swelling of the hands and face—yielding, however, to a mild diuretic treatment.

CURARE IN HYDROPHOBIA.

The *N. Y. Medical Record* of August 9th contains the report of a case of hydrophobia (rabies) successfully treated with curare by Dr. Offenberg. The use of the remedy, which was given hypodermically at first in two doses respectively of gr. $\frac{1}{3}$ each, was commenced about three hours after the sudden outburst of the attack; subsequently the dose was increased to gr. $\frac{6}{1\frac{1}{3}}$ at intervals of about half an hour. After the fifth of these latter injections intense symptoms of paralysis rapidly developed—within one minute—the convulsions had become less severe in intensity and duration; and an hour after the last subcutaneous injection, occurred the last convulsion that the patient, a girl aged twenty-four, had. It was scarcely more than an irregular convulsive inspiration, and in great contrast to the violence of the convulsions at the outset of the attack. Twice after the last injection, and following a short convulsion on both occasions, the respiratory movements ceased altogether. Respiration, however, was at once restored by strong pressure upon the abdomen and thorax. The patient recovered perfectly.

TO STUDENTS.

Never, perhaps, more than at the present time has it been so necessary for medical students to balance the relative advantages and drawbacks of the careers open to them when they will be fairly launched in life, and to choose that one which will best accord with their circumstances and their tastes. Strange though it may appear, we are disposed to lay more stress upon the circumstances than the tastes—not, indeed, that any one is to accept his situation and stick to it, like a barnacle upon whatever rock it is thrown, but still the responsibility of a selection, and the hesitation of mind induced when more than one course opens before him, are so onerous that one is often thankful when determining conditions point him out his way. The young medical diplomate is more the waif of chance than any other adventurer on the wide highway of life. His family's friends in the country may have interest enough in a dispensary committee to secure him at the start a post for the remainder of his days; a voyage taken at haphazard may convert the casual ship's surgeon into an antipodean settler.

The conversion of the student into the qualified practitioner is in most cases a second emancipation from the discipline of the schoolboy. He is no longer fettered by tasks with the fear of an examination before his eyes, and he feels himself master of his time and of his reading. If he desires to add to his store of special knowledge he will take out courses in some of the great Continental schools, especially Vienna, where he will find materials for study most admirably systematised. Or should he wish to engage at once in the practical duties of his profession, he will find it much to his advantage to spend a year or two as house-surgeon in some hospital or infirmary. These appointments, of which there are many in the English and Irish counties, are not very difficult to be obtained by a man who can produce good testimonials of his steadiness and efficiency. They are worth from about £60 to £120 a year, besides, in most cases, board and apartments, fuel, light, and attendance. Or should he be desirous of seeing a little more of the world than school, college, or home has shown him, he may serve for a time as surgeon in some of the many lines constituting our mercantile marine. The chief of these are the Peninsular and Oriental, the West Indian Mail, the Cunard, Inman, Guion, White Star, and other North American lines, South American, South African, and Australian Mail Steamers, and, lastly, emigrant ships. The scale of pay, with fees, averages from about £8 to £15 a month, besides mess in the saloon and every

requirement free of charge. These appointments, with the exception of the Peninsular and Oriental, are not difficult to be procured. The shipping agents and directors of companies are the persons to whom application is to be made. The medical duties are in general very light, but in many lines the doctor is required to assist the captain in the accounts, and he is also expected to take the lead in the social amusements of the passengers. To any one who can fill the part of a break-down melodist, a purser's accountant, and an obstetrician at a moment's notice, the post would be an easy one, but to most young men the combination of talents proves onerous, and one or two years on the deep will satisfy the most restless or the most lazy. Apart from the fact that one's knowledge may go to rust from want of the opportunity of exercising it, the prestige of the chronic seafaring practitioner stands at a low ebb. The "experienced surgeon" of emigrant ships is either a myth or a ne'er-do-well. Incidentally, however, a voyage may determine the sphere of future practice and fortune, as a young colony or rising settlement may tempt the surgeon to resign his ship and his mother-soil, and cast in his lot with a new *terra firma*. But of these colonial practices we shall speak anon.

Now, supposing that a couple of years have been spent in either of the above-mentioned ways, the question of a permanent settlement in life presents itself for solution. Two careers are open to the young practitioner. He may choose either a public service, in which he will have a fixed salary, or he may choose private practice, to which he may join public civilian appointments. In the first class are comprised the Army and Naval Medical Services and the Indian Army Medical Service. The respective arrangements of each of these we have not space to discuss—suffice it to say that the last named is, at present, much the most popular, inasmuch as the pay is good, the promotion fairly rapid, and the social position of the medical officer respected. It is not therefore surprising that for the 40 or 50 vacancies thrown open every year to competition there are generally from 60 to 80 candidates who present themselves.

The Naval Medical Service is necessarily the least brilliant, and the monotony of life on board ship with hardly half occupation is irksome; but to a man of quiet scientific tastes, especially to a naturalist, it would secure the even tenor of his way from all disturbing struggles for existence. It has, moreover, the merit of being, from the nature of things, less amenable to capricious departmental changes or radical revolutions such as abolished the regimental system in the army; and the expense of living is so moderate that anyone of average economy may save out of his income what will be an agreeable addition to his retiring pension. The mess subscription ranges only from £3 to £5 a month, wine included. The Army Medical Service is just now in a transition state; its interests have been sacrificed in the discreditable duel between the War Office and

the managers of the medical schools. First of all, through a desire to unify the medical as well as every other department in the army, the War Office introduced changes which resulted in lowering the social status of their medical officers, and, by a vicious reaction, under this deteriorated system few candidates have entered who could either socially raise it or be raised with it. The Secretary for War has persistently ignored the real grievances. He has affected to regard their dissatisfaction as having its origin on pecuniary grounds, and he has acted as though a little more pay would smother all complaints and bribe them into silence. The profession has repeatedly declared that it is not increased pay they wished to see given to their brethren in the army, but a due consideration for a scientific corps consisting, presumably, of gentlemen. Between the abolition of the regimental system, liability to dismissal after ten years' service, and the feeling of uncertainty caused by the issue of conflicting warrants, the *morale* of the Army Medical Service has been so materially injured that it will have eventually to be remodelled throughout. It may adopt the Russian Nihilists' motto, "the worse things are the better they are," till a climax of inefficiency clears the ground for a new organisation. It must, however, be remembered that a part of the reform must originate with the medical educational bodies themselves. No warrant from a War Office can pitchfork any man into higher social consideration than his training and education warrant; and so long as the general education of combatant officers is severely tested before they begin their professional study, while that of their medical brethren is hardly tested at all, it cannot be surprising that the latter should, as a body, hold the lower place. No one can pretend to imagine that the preliminary examination required from medical students bears any comparison with the high standard required from candidates competing for admission to Sandhurst. Until there is some levelling up in this respect amongst us we fear the army medical corps will not, as such, be regarded as having an equal right to be considered a body of educated gentlemen.

The aspirant for civil practice generally seeks an appointment to a hospital, a county infirmary, a workhouse, or a dispensary district, not only for the sake of the emolument, but also on account of the recognised position they confer. County infirmaries now only produce £100 a year, but they bestow a very high status on their possessors, and will probably be more remunerative in a short time. Public situations, such as poor law and lunacy inspectorships, &c., are more valuable, ranging from £500 to £1,500 a year, but as yet they are usually obtained by influence. The office of resident medical superintendent of the district lunatic asylums, of which there are now twenty-two, is worth, including allowances, from £400 to £600 a year.

Irish poor law dispensaries are worth more than passing notice, since

they challenge most obviously the attention of the young practitioner, who finds them too often at once the field and the burial-place for his talents. They average in value from £120 to £160 a year, including fees for vaccination and registration; and under an Act of Parliament, passed a few years ago, poor law guardians are empowered to grant to medical officers who have served upwards of twenty years a retiring allowance not exceeding two-thirds of their salary. The dispensary medical officer is also the medical officer of health for the district, for which he receives about £15 or £20 a year—the latter sum is very seldom exceeded. If we add £10 a year, received for attendance on the police and coastguard (if his district be on the seashore), we have the whole of the fixed income in ordinary cases. It is needless to say that in populous districts the value of the private practice may be estimated as amounting to two or three times the sum received for the dispensary appointments; so that if a man be fortunate he may, within a month of winning his qualifications, step into a post where he may earn £500 a year. Such is the sunny side of the picture; but sunshine is the exception rather than the rule, metaphorically as well as literally, in Ireland. In the first place, the mode of election is objectionable, as the votes of the electors—the guardians—are sought on all kinds of grounds, as well as on the merits of the candidates. Landlord or anti-landlord influence, party zeal, religious persuasion, and the desire to help on a neighbour's son, are amongst the most powerful factors in determining the choice; and sometimes the candidates themselves are not too particular in their downward competition to secure the guardians' favour. As was well pointed out by Dr. Isaac Ashe in his Carmichael Prize Essay, there are 25 per cent. too many medical men in Ireland. The consequence is that on the occurrence of a vacancy a number of candidates swoop down and underbid each other for the coveted place. It is not surprising that occasionally the salary is lowered for the incoming officer, and it has happened within the knowledge of the writer that a candidate has offered, if elected, to give a written surrender of all claim to a retiring pension. The pensions themselves are arranged unsatisfactorily, as they are based on the permissive principle. There are many instances in which a man, incapacitated by age or failing health, is afraid to resign lest his Union should value economy more than justice, and deny him his long-earned pittance. If the *ex-officio* guardians, who are in general more liberally disposed than the elected guardians, are his personal friends, they may carry the vote; but it is a poor position for the retiring officer to weigh, not the claims of his service, but his county influence. Of his duties as medical officer of health the less said the better. No one can affect to believe that any effort seriously worthy of the name of sanitary science can be expected from a man at a salary of £15 a year. Of course the retiring allowance can be made compulsory, and sanitary supervision can

be transferred to a specialist who shall have charge of an aggregation of districts. Such reforms as these can be effected, and we hope will be effected shortly, when the Legislature has time to discuss the merits of the case; but in the eyes of the medical profession itself poor law medical service must stand incomplete until it is made a branch of the Civil Service (first class), and treated accordingly—a consummation, it is to be feared, very far distant. When it is thrown open to public competition, and when those whose names stand highest on the list are offered the best chances of preferment at their outset in life, we may have more confidence that young men beginning their career will have opportunities for the exercise of the superior abilities they have as students displayed.

These remarks are not intended to deter from seeking poor law appointments in a good district, but our advice would be not to apply for them as stop-gaps *pour passer le temps* till something better turn up. Circumstances may render residence in some particular part of the country, and of course the Union appointment, desirable for some particular man; but in the majority of cases where no local ties exist, the young novitiate had better weigh well his prospects and his probable degree of contentment, should he be the chosen of the electors, ere he rushes in, probably to stand in the way of another, and certainly to lower in the eyes of the guardians the position of the medical men thus competing for their favour. It will be gathered from these remarks that their own country should not be looked upon as their professional home by at least three-fourths of Irish students. Ireland is over-doctored from both practitioners' and patients' points of view, but at the same time the study of medicine is and ought to be indigenous to its soil, and well-trained surgeons should be a recognised and steadily-growing article of export. Ireland has, comparatively speaking, very few manufactures—its commercial prospects are consequently less promising than in the sister country, and the sons of the well-to-do middle class are obliged to seek their bread in the "learning," to the love of which we are traditionally supposed to have a leaning. More than this, Ireland, through her vast poor population, who are only too glad to be admitted into her metropolitan hospitals, supplies unrivalled material for clinical instruction. There is no city in the world which can compare with Dublin in the matter of hospital accommodation proportionate to its size. Nine general hospitals, several of which have special departments, besides eight special hospitals, provide opportunities for practical training for her students, such as are possessed by no city in the empire. Every student who shows adequate intelligence and attention can become a resident pupil or a clinical clerk, residing on hospital premises, and gaining from day to day a sense of familiarity with the Protean phases of disease and their remedies, which must stand him in good stead when brought face to face

and alone with the responsibilities of practice in after-life. If the Dublin student does not practically know his business, he is utterly inexcusable. To what market, then, is he to carry his knowledge? To two—the colonial and the English. Australia, South Africa, and India are all lucrative fields for practice. Those who are fond of riding and of an out-door life will find here free scope for their tastes as well as their occupations. In a new settlement a minimal sum is generally guaranteed by the residents to induce a medical man to pitch his camp among them. If the little colony prospers and he is popular, his fortune is made. At the worst he has only lost his time, and he can transfer his capital—his knowledge—to another locality; or, should he prefer the market nearer home, he may begin with an assistantship to an English practitioner. In England, Dublin qualifications are in high repute, and an assistantship is easily obtainable there of the immediate value of £120 to £140 a year, with the hope in some cases of obtaining ultimately a partnership in his principal's practice, or perhaps succession to the whole of it. If he be possessed of some capital he may purchase the goodwill of a practice with the transfer of Union appointments and clubs. This is to some extent a hazardous proceeding, but a preliminary assistantship or partnership would obviate some of the risks. For the reason stated above—viz., the greater attractions a commercial career has to offer in England, there is not in that country a plethora of doctors—there is room and fair play for many an earnest, well-trained man.

STEWART WOODHOUSE, M.D.

LEAD PALSY.

FRIEDLANDER (*Virchow's Archiv*, 1879, p. 24), *à propos* of a fatal case of lead paralysis with muscular atrophy, the details of the autopsy on which he gives with great minuteness, thinks that the lesions he found authorise him in laying down the following conclusions:—Lead causes the appearance of a functional disturbance of muscle, to which is soon added a disturbance of nutrition, characterised by the proliferation of the nodules and the diminution of the volume of the muscular fasciculi. Secondary degeneration of the nervous fasciculi supplying the affected muscle then follows. From this destruction of the nervous trunk paralysis results, and this paralysis, which is peripheral in character independently of any modifications already undergone by the muscle, causes its rapid atrophy. Dr. Dejerine also has recently laid before the Société de Biologie the results of his researches on the same subject. In three cases out of five he found degeneration of the medullary roots. The anterior cornua were not affected.—*Archives Gén. de Méd.*, Août, p. 213.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, M.D., F.K.Q.C.P.

Vital Statistics

Of Eight Large Towns in Ireland, for Four Weeks ending Saturday, September 6, 1879.

Towns	Population in 1871	Births Registered	Deaths Registered	Deaths from Zymotic Diseases							Annual Rate of Mortality per 1,000 Inhabitants
				Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhœa	
Dublin, -	314,666	783	592	15	8	19	3	5	24	13	24·5
Belfast, -	182,082	520	321	—	3	—	—	15	14	15	23·0
Cork, -	91,965	218	148	—	1	12	—	—	2	3	21·0
Limerick, -	44,209	99	70	—	—	1	—	—	1	2	20·5
Derry, -	30,884	67	47	—	—	—	—	—	—	—	20·0
Waterford, -	30,626	60	42	—	—	—	—	—	1	—	17·8
Galway, -	19,692	50	23	—	—	—	—	—	—	—	15·0
Sligo, -	17,285	34	14	—	—	—	—	—	—	3	10·5

Remarks.

There was rather a high death-rate in Dublin and Belfast, but in the remaining large towns the mortality was low or very low. It was at the rate of 19·7 per 1,000 of the population annually in London, 16·9 in Edinburgh, 15·9 in Glasgow, and 26·1 within the municipal boundary of Dublin. If the deaths of persons admitted into public institutions from localities outside the district are omitted, the death-rate of the Dublin registration district falls to 23·6 per 1,000—a figure still considerably higher than that of any of the other large Irish towns or of the chief cities of England and Scotland. The deaths from zymotics in Dublin were 117, against a ten-years' average of 142·1 in the corresponding period. The mortality from smallpox was low until the fourth week, in which 9 of the 15 deaths attributed to this disease were registered. A recrudescence of the epidemic is further evidenced by the fact that on September 6 there were 55 cases of smallpox under treatment in the Dublin hospitals, compared with 40 under treatment on August 9. Whooping-cough continues to prevail in Belfast, and scarlatina is epidemic in Cork. Of the 24 deaths due to fever in Dublin, 5 were returned as

being caused by typhus, 14 by typhoid, and 5 by continued fever of undetermined type. The mortality from diarrhœa remained very low owing to the cool showery weather. Only 36 deaths from this disease were registered in the eight Irish towns. In 20 English towns diarrhœa caused 1,104 deaths, compared with 2,450 in 1878, 1,827 in 1877, and 2,521 in 1876. Affections of the organs of respiration were credited with 99 deaths in Dublin, including 64 from bronchitis and 23 from pneumonia. The averages of the previous 10 years were—respiratory diseases in general, 54·9; bronchitis, 37·1; pneumonia, 9·7.

Meteorology.

Abstract of Observations made at Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of August, 1879.

Mean Height of Barometer,	29·770 inches.
Maximal Height of Barometer (on 31st at 9 p.m.),	30·291 ,,
Minimal Height of Barometer (on 28th at 4.45 p.m.)	29·111 ,,
Mean Dry-bulb Temperature,	56·9°
Mean Wet-bulb Temperature,	54·2°
Mean Dew-point Temperature,	51·6°
Mean Elastic Force (Tension) of Aqueous Vapour,	·385 inch.
Mean Humidity,	83·0 per cent.
Highest Temperature in Shade (on 11th),	71·7°
Lowest Temperature in Shade (on 31st),	44·4°
Lowest Temperature on Grass (Radiation) (on 30th),	39·7°
Mean Amount of Cloud,	59·1 per cent.
Rainfall (on 19 days),	3·704 inches.
General Direction of Wind,	W.S.W. & S.E.

Remarks.

The weather of August was in keeping with that which had previously prevailed during the present season; it was eminently changeable, with a low mean temperature—namely, 2·5° below the average of the preceding 13 years. On the night of the 2nd an exceptionally violent thunder-storm raged in the S.E. of Ireland, and over the southern and central parts of England. Great damage was done by enormous hail-stones at Richmond, Twickenham, and other places in the western suburbs of London, and the rainfall during the storm measured 3·18 inches at Cambridge, and 2·43 inches at Yarmouth. The storm was not felt in Dublin, but on the 5th a downpour of rain occurred in this city—1·615 inches being registered in 24 hours ending 9 a.m. of the 6th. Drier and warmer weather succeeded—the mean temperature of the week ending Saturday, the 16th, although not quite reaching 60° (59·8°), being higher than it had been in any other week during the present year. On the night of the 12th a severe thunderstorm prevailed over

the N. and N.E. of Ireland, while vivid lightning was seen occasionally in Dublin from 9·30 p.m. to midnight. At this time tropical heat was felt in the S.W. of France, the thermometer rising to 100° in the shade at Biarritz and Rochefort. On the 17th the weather again became very broken in the British Islands. On this day a violent rainstorm caused unprecedented damage to the London and North-Western Railway in North Wales. In the last week some very deep atmospherical depressions crossed the United Kingdom from S.W. to N.E. They caused fresh to strong S.W. gales generally, and destructive rainfalls in England. On the afternoon of the 28th the barometer fell below 29 inches over the N. of Ireland and nearly the whole of Scotland—the 6 p.m. reading at Mullaghmore, near Sligo, being 28·74 inches. On the 31st an anticyclone advanced over the kingdom from the westward, and the weather temporarily improved. In Dublin the atmosphere was foggy on the 3rd, 10th, 11th, and 20th; lightning was seen on the 12th, 21st, and 22nd; and high winds were felt on the 12th, 17th, 21st, 22nd, and from the 25th to the 29th inclusive. Bright lunar rainbows were seen at Bray on the evening of the 28th, and next day there was a heavy hailshower at Lough Bray.

PERISCOPE.

Edited by G. F. Duffey, M.D., F.K.Q.C.P.

SALICYLIC ACID IN ENTERIC FEVER.

In an able communication on "The Physiological and Therapeutical effects of Salicylic Acid and its compounds" (*N. Y. Med. Journal*, Aug., 1879), Dr. William O. Moore sums up his remarks as to the treatment of enteric fever by this drug as follows:—"1. Salicylic acid and its salts have a decidedly beneficial effect in typhoid fever, in reducing the temperature and thereby decreasing the mortality. 2. That its tendency is to shorten the duration of the disease by its antiseptic properties. 3. That the salicylate treatment is equal to any other antipyretic form of medication. 4. That there is every reason to suppose that the salicylate, combined with the cold-water treatment, would excel all other methods. 5. That a large dose of one drachm of the salicylate of soda acts better given at once than divided doses. Such a dose is sufficient for twenty-four hours." Dr. Moore observes that he has collected 800 cases, in which the mortality was 11 per cent., where the antipyretic treatment was carried out by means of quinine and cold baths. He thinks that 300 cases which he has collected, treated with salicylates alone, will compare very favourably with the above, the mortality being 11½ per cent. This is a great improvement over the expectant or symptomatic

treatment, in which the mortality in 1,718 cases was 27 per cent.; and he doubts not that, if the cold-water treatment combined with the salicylate method were adopted, the percentage of mortality would come down to 10 or even 8 per cent.

EARLY SYPHILITIC AFFECTIONS OF THE NERVOUS CENTRES.

Prof. Mauriac closes a long and able paper on this subject with the following deductions from the facts and researches at his command:— 1. Syphilis may attack the nervous centres at a very early period after the initial lesion. 2. The early cerebro-spinal lesions are those which develop during the virulent period of the malady—that is to say, during the first two or three years. 3. There are degrees in this precocity of the cerebro-spinal syphiloses. The first includes those which set in within the first twelve months; the second those which develop in the second or third year of the constitutional malady. Statistics seem to show that those of the first degree are more common than those of the second. 4. Among the early visceral localisations of syphilis, those in the cerebro-spinal system are incomparably the most numerous. 5. They are also the most dangerous. Their gravity does not increase with their diathetic age. Those which develop during the first months of syphilis are as formidable as those which belong to the more advanced stages of the malady. 6. All the forms, all the degrees, all the phenomenal combinations that constitute the symptomatology and the processus of the localisations of syphilis in the neural system, are met with in the early as well as in the late cerebro-spinal syphiloses. 7. Certain symptomatic complexes, however, seem to predominate. The most frequent are those which consist in an attack of hemiplegia, involving the whole of one side of the body. 8. Among the attacks of hemiplegia, the syndroma comprising right hemiplegia and aphasia is the most common. 9. The paralytic forms are much more common than the convulsive or epileptic, in the early cerebral syphiloses. 10. In the cerebro-spinal syphiloses the psychical troubles and the incoordination of the movements are never systematised as they are in mania, general paralysis, and locomotor ataxia. 11. The absence of systematisation in the cerebro-spinal syphiloses must be regarded as one of their chief characteristics. The only exception is in the case of the syndroma of right hemiplegia and aphasia. 12. Early localisations of syphilis in the spinal cord are much less common than in the encephalon. 13. The lesions which seem to belong to the early cerebro-spinal syphiloses are diffuse or, more frequently, circumscribed hyperplastic effusions into the cortical layer of the brain and pia mater, and changes in the Sylvian arteries with consecutive ischæmic softening. 14. In some cases of early cerebro-spinal syphiloses that terminated fatally no lesion was found, but at that time the existence of arterial syphilis had not been recognised. It may be presumed that

death had resulted from sudden anæmia of the nervous centres that are essential to life. 15. With regard to the etiology of the early cerebro-syphiloses only very vague conjectures can be advanced. In most of the cases the initial lesion as well as the consecutive cutaneous and mucous manifestations were very mild in character. 16. The general cause of the constitutional malady is not modified by the appearance of early localisations in the nervous centres. The other manifestations develop before, during, and after the localisation in the neural system, without presenting any deviations from their usual forms, degrees, course, or topography. 17. The precocity of the cerebro-spinal syphiloses furnishes no special indication with regard to treatment. Whatever may be the age of the constitutional malady, the localisations in the nervous centres demand the same specific medication. The peculiar conditions of each case furnish the secondary indications relative to the choice, doses, and combinations of the two specific agents.—*Annales de Dermatol. et de Syphilig.*, Vol. X., No. 3, and *N. Y. Med. Record.*

THE SUDDEN DEAFNESS OF SYPHILIS.

In an article on the above subject in the *American Journal of the Medical Sciences* for July, by Dr. Sexton, that gentleman adduces the following conclusions:—"1. Syphilitic affections of the ear inducing sudden deafness are of exceptional occurrence; and 2. They would seem to be induced by a pre-existing hyperæmia in the ears, excited by sympathetic relationship or by an intercurrent attack of aural mucous catarrh. 3. The attacks are characterised by their sudden occurrence, and both ears are usually affected simultaneously, although the contrary sometimes takes place. 4. The deafness is always very great. 5. This syphilitic affection speedily causes a disarrangement of the integrity of the chain of ossicles—most likely at the malleo-incudal joint, probably, in some instances, at the stapedo-incudal joint, or both of these. The movements of the stapes in the oral window are also likely to be interfered with. The two first-mentioned conditions serve to explain the noises in the ears, and the autophony; the last-mentioned condition would increase the anomalies of hearing. 6. The affection does not depend, so far as we know, on anomalies of any portion of the labyrinth, although the latter, of course, is liable to invasions from syphilis with the nature of which we are as yet unfamiliar. 7. The disease is usually unattended by pain in the ears, it is non-purulent, and its incurability is a characteristic."

PILOCARPIN IN INTERMITTENT FEVER.

Dr. Gaspar Griswold, House Physician to the Bellevue Hospital, New York, gives, in the *N. Y. Med. Record* of August 16th, an account of seven cases of intermittent fever treated by the hypodermic injection of one-fifth of a grain of muriate of pilocarpin, given as soon as possible

after the development of the chill. From these cases he thinks it seems fair to conclude:—"1st. That the muriate of pilocarpin, administered hypodermically, will promptly cut short the chill of malarial intermittent fever. 2nd. That in a large proportion of cases so treated the paroxysm aborts, terminating in the sweat caused by the pilocarpin, there being no hot stage. 3rd. That such abortion of a paroxysm is in itself sufficient to effect a cure in many cases. 4th. That such abortion of a paroxysm is a valuable adjuvant to treatment with quinine during the intervals. 5th. That a dose of pilocarpin sufficient to produce this effect acts gently, without causing exhausting diaphoresis or unpleasant ptyalism. The promptness with which an adequate dose of pilocarpin interrupts a chill is suggestive of its possible efficacy in cases of pernicious intermittent fever, where prevention of the full development of a paroxysm is often of the first importance."

FATTY (AMYLOID?) DEGENERATION OF THE PLACENTA.

From some remarks made by Dr. Heitzmann on a specimen of fatty degeneration of the placenta presented to the New York Pathological Society by Dr. Putnam-Jacobi, it would appear that although such placentæ present the gross appearances of fatty degeneration, a microscopic examination reveals the fact that the change is chiefly amyloid.—*N. Y. Med. Record*, Aug. 16.

GONORRHŒA IN THE MALE.

In the treatment of this affection Dr. J. H. Brinton employs carbolic acid in the shape of a solution containing gtt. ij. of the acid to ʒj. of lime-water, as a local application in the acute stage of the disease. At the same time cubebs is administered internally in doses of a tablespoonful in half a tumblerful of water, three or four times a day. The dose is pushed until diarrhœa or nausea supervenes, when the quantity is reduced.—*N. Y. Med. Record.*

THE USE OF IODIDE OF POTASSIUM AND CALOMEL IN OPHTHALMIC PRACTICE.

Dr. W. F. Schlaefke has an interesting article on this subject in Vol. XXV., Part 2, of *Graefe's Archives.* A few cases have been recorded in which iodide of potassium was being employed internally; upon calomel being insufflated into the conjunctival sac a violent inflammation of this mucous membrane immediately took place. Nothing of the kind has been observed so long as only one of these remedies was used. In order to ascertain the cause of this remarkable occurrence, Dr. Schlaefke undertook a number of chemical experiments and experiments upon animals which have led him to the following conclusions:—Iodide of potassium taken internally is very rapidly diffused through the organism, in a short

time makes its appearance in the various secretions and excretions, and may be found in the tears within a few minutes. Iodide of potassium, taken twice a day in doses of 0·5 gramme, is constantly present in the tears in appreciable quantities. Calomel is but slightly soluble in water, but is ten times more soluble in a $\frac{3}{4}$ per cent. solution of chloride of sodium. Calomel powder dusted into the conjunctival sac is dissolved by the tears. If iodide of potassium be present in the tears at the time the calomel is insufflated, iodate of mercury and iodide of mercury are formed. These substances have a caustic action and give rise to violent inflammation.

H. R. S.

LOCAL TREATMENT OF ECZEMA.

Dr. Piffard, Professor of Dermatology in the New York University, in a recent article on this subject, advises the hypodermic injection of arseniate of sodium into patches of infiltrated eczema. He uses solutions of one-fifth, one-half, and one per cent. For a single patch of moderate size a single injection of five to ten minims of the one per cent. or one-half per cent. solution is made. If the patch is larger, or if there are several of them, the weaker solutions are employed, and two or more punctures made in the larger patches, or distributed among the smaller ones. The injections are to be repeated at intervals of two or three days. He has seen no undue reaction from them. [*Cf.* a former communication on a similar mode of treatment in the Journal of August last, p. 188.—Ed.] Another method employed by him to reduce infiltration is the application of some of the native American "acro-narcotics" to the affected parts. Among these, hydrastis and its derivative occupy, in his opinion, the first rank, and next in usefulness the iris versicolor. Of the latter he makes a tincture from the root, which is rubbed up with simple ointment until the alcohol has evaporated. By these means he believes the absorptive function of the capillaries is stimulated.—*Boston Med. and Surg. Jour.*

S. W.

THE CONSTITUTION OF THE HYMEN, AND CARUNCULÆ MYRTIFORMES.

Up to the present time one has looked upon the hymen as being composed of a fold of vaginal and vulvar mucous membrane. According to M. Budin nothing is more erroneous. In his opinion the hymen is not a membrane or a special organ, and, in fact, has no existence. If the genitals of a little girl are examined, it will be noticed that what has hitherto been considered the hymen forms a cup-like projection between the labia majora and minora. This projection, as M. Budin demonstrated lately at the Société de Biologie (*Jour. des Con. Méd.*, 7 Août), is only the anterior extremity of the vagina. The form of the vaginal orifice (to call the hymen by its true name) is variable—most frequently it is

circular. It has not that fragility which for so long a time has been ascribed to it. Very often it is simply stretched without being broken when sexual connexion takes place for the first time. When it is broken there is nearly always loss of blood and pain. The lacerations produced are either simple or multiple. M. Budin has also shown that carunculæ myrtiformes do not occur in women who have not had children. As above stated, the vaginal orifice (hymen) in a large number is not ruptured by the act of connexion, or any pain or loss of blood experienced. When such women are in labour the hymen often opposes a very formidable obstacle to the delivery of the head, and it is only after the rupture of this fold that the infant's head passes. It is for this reason that the stage of expulsion is so much shorter in multiparæ, and it is by this rupture of the vaginal orifice that these carunculæ are, in M. Budin's opinion, produced.

SALICYLATE OF SODA IN CHOREA.

As the results of but a few experiments as yet in the treatment of chorea by salicylate of soda, Dr. S. Weir Mitchell, of Philadelphia, thinks that the drug promises to be of some value. Dr. Gerhard, who has also used salicylic acid at Dr. Weir Mitchell's request, is satisfied that it is a valuable aid in the treatment of chorea.—*Boston Med. and Surg. Jour.*, March 27.

THE HYPODERMIC INJECTION OF MORPHIA.

Dr. H. H. Kane, of New York city, who has for some time past been collecting statistics on the hypodermic injection of morphia, will consider it a great favour if members of the profession who see this, and have had experience of the operation, will answer the following questions:—

1. What is your usual dose?
2. Do you use morphia alone or with atropia?
3. What is the largest amount you have ever administered at one time?
4. Have you had inflammation or abscess at the point of puncture?
5. Have you had any deaths or accidents caused by hypodermic injections of morphia?
6. Do you know of any cases of opium habit thus contracted?

Where there has been an autopsy (5), please state the fact and the results obtained therefrom. All communications will be considered strictly confidential, the writer's name being used only when he gives full consent thereto. Address all letters to Dr. H. H. Kane, 366, Bleecker-street, New York, U.S.A.

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OF

MEDICAL SCIENCE.

NOVEMBER 1, 1879.

PART I.

ORIGINAL COMMUNICATIONS.

ART. XI.—*Three Cases of Pleuritic Effusion treated with Jaborandi.* By JOSEPH W. HUNT, M.D. (Lond.); Physician to the Wolverhampton and Staffordshire General Hospital.

IN the first and second of the following cases jaborandi was only prescribed after the failure of other means of getting rid of fluid which remained in the pleura following aspiration, and there could be very little doubt that absorption was materially hastened by its use. In the third case jaborandi was the sole drug that was tried, and, therefore, the results cannot be so conclusive.

From its well-known action on the skin, and from the beneficial results not infrequently obtained by the use of less powerful diaphoretics, there is every reason to give this drug a fair trial. The mode of action is obvious. The fluid contents of the blood-vessels being diminished by means of the excessive cutaneous secretion, a compensatory absorption of fluid takes place from the tissues and cavities of the body, and the blood-vessels thus absorb even more than they give out through the skin. That this is so is readily shown by the use of Dr. Gowers' hæmacytometer, by means of which instrument we are enabled to enumerate the number of corpuscles in a given quantity of blood. If the diaphoresis simply caused a loss of fluid from the blood-vessels, and no more, the proportionate amount of solids in a given quantity of blood would be increased, and the number of corpuscles also

increased; if absorption from the tissues were equal to secretion through the skin, the corpuscular richness of the blood would remain much as before; but if, as proves to be the case, absorption is in excess of secretion, then the number of corpuscles contained in a given quantity of blood would be diminished in proportion to the excess of fluid absorbed over that secreted. A patient was taken, and his blood found to contain 104 per cent. of red blood corpuscles. A dose of jaborandi (3i. of the liquid extract) was immediately afterwards exhibited. In an hour he was sweating profusely, and the corpuscular richness of the blood had sunk to 94 per cent. The dose was repeated at the end of the hour with much the same result, the corpuscles numbering 90 per cent. At the end of the second hour there was a second repetition of the jaborandi, causing excessive salivation and diaphoresis, and the percentage of the corpuscles still further fell to 85—that is to say, three drachms of the liquid extract of jaborandi, given in divided doses, reduced the corpuscular richness of the blood in three hours nearly 20 per cent.

Case I.—H. A., aged thirty, labourer, was admitted to the hospital under my care on August 20, 1878, with his right pleura full of fluid. The initial rigor dated about three weeks before admission. Temperature, 101·2°; pulse, 82; respiration, 36. The intercostal spaces were obliterated on the affected side, the whole of the back absolutely dull on percussion, with absent vocal fremitus. The right semicircumference was one inch greater than the left. The heart was displaced outside the nipple line, and the liver depressed three inches. There was dyspnœa, much increased by exertion. The same afternoon he was aspirated, and 74 ounces of clear serum drawn off with much relief to the dyspnœa. On the following day the percussion note was fair over the supra-scapular region and the upper portion of the scapula, but below the angle of the scapula there was considerable dulness and absent vocal fremitus. He was ordered a mixture containing large doses of the tincture of iron, and afterwards to be painted freely with iodine every other day. As this tonic treatment had no effect in causing absorption of the remaining fluid, the patient was ordered a mixture containing iodide and acetate of potash and scoparium. This treatment was continued for several days, during which time his general health improved, but there was no indication of absorption of fluid. Therefore, on September 4th he was ordered jaborandi in doses increasing up to a drachm and a half of the liquid extract every four hours. This caused considerable diaphoresis and a speedy absorption of the fluid, so that on September 13th the breath-sounds were louder, the dulness considerably

diminishing, and vocal fremitus normal, except over the very base. On September 28th he was discharged cured. A little dulness still remaining at the base, was afterwards proved by the aspirator needle to be only thickened pleura.

Case II.—T. T., admitted March 1st, 1879, had had pain in his chest for eight or nine weeks, but had continued work till eight days before admission, when he had to lay by on account of its increased severity. On examination the physical signs of fluid in the left pleura were found. Dulness was absolute, and vocal fremitus wanting as high as the angle of the scapula, and over the rest of the side both were impaired. Temperature, 103° at night—102° at morning; pulse, 88; respiration, 36. The expectoration was abundant, and mucous in character, and there were copious night sweats. He was ordered a saline diaphoretic mixture every six hours. On March 9th, there being no improvement, and the signs of hectic continuing, it was feared that the fluid might be purulent, and the patient was, therefore, aspirated. Thirty ounces of serum were drawn off with only a little change in the physical signs. He was ordered a mixture containing digitalis, iodide of potash, and scoparium. On the 14th the following note was taken by the house physician:—"Absolute dulness commences posteriorly at the tenth rib, but the note is modified to middle interscapular; above this it is very good, though not equal to the other side. Breath-sounds audible throughout, but very weak below angle of scapula. Vocal fremitus present, but deficient below the middle of the scapula." On March 26th there was no further improvement, and he was then ordered a drachm of jaborandi every three hours. The result was most beneficial, as the following note of March 31st shows:—"Sweats profusely about twenty minutes after taking the jaborandi, and this continues for an hour. A little salivation; no supra-pubic pain; urine about the same in amount as before the exhibition of the jaborandi; physical signs much improved; absolute dulness commences at upper border of eleventh rib; vocal fremitus is marked to the very base; breath-sounds weak, but audible to about tenth interspace." On April 2nd there was nothing abnormal beyond what a thickened pleura would account for, and the jaborandi was discontinued, and the tincture of the perchloride of iron substituted. On account of the unfavourable weather he was not discharged till April 15th.

Case III.—B. J., aged twenty-four, admitted as an in-patient on February 27th, 1879, though he was first seen as an out-patient, and slight pleuritic effusion diagnosed, about ten days before this. The temperature ranged at night from 100° to 101°; pulse, 80; respiration, 23. There were night perspirations. As high as the angle of the scapula on the right side there was dulness, with absent vocal fremitus, and the breath-sounds were almost inaudible. On admission he was ordered

jaborandi in doses gradually increasing to one drachm every two hours. On March 6th he made great improvement; on March 10th friction was audible at the base, and on the 14th the following note was made:—"Dulness commences at tenth space; vocal fremitus felt all over the back, and well marked." Two days before this the jaborandi had been discontinued, and iron ordered internally, and the local application of iodine.

All these patients bore the jaborandi well—one indeed increasing in weight while he was sweating profusely under its influence. In no case did it lower the general health to any appreciable extent, and, with the exception of the diaphoresis and salivation, there were no inconveniences attending its administration, even in the largest doses (ʒ iss. secundis horis). In none of the cases was there any beneficial result obtained till profuse diaphoresis was excited.

Art. XII.—*On Abortive and Mild Typhoid Fever.* By Charles A. Cameron, Superintendent Medical Officer of Health for Dublin.

In the last number of this Journal the Registrar-General for Ireland has expressed his opinion that a "large number" of the cases of fever which in a recent paper I attributed to the use of infected milk were "in all probability gastro-enteric catarrh of a febrile type." He further states that this disease is common in Dublin, especially during damp and cold weather. It is not my intention to discuss at length the question—Is there such a disease as "gastric fever"? Dr. Grimshaw believes in its existence, adopting the view of Niemeyer that *febris gastrica* may be produced without typhoid infection; on the other hand, I think the great majority of physicians hold that the so-called gastric and mucous fevers are mild forms of typhoid. I object, however, to Dr. Grimshaw asserting that the cases of fever to which I referred were to any substantial extent composed of febrile gastro-enteric catarrh. The Registrar-General has not given any reasons why these cases should properly not be considered as typhoid; and therefore I assume that he infers that they were not so because the symptoms in some of them were very mild. In my paper I have disposed of any objection that could be properly urged against the non-diarrhœal cases being regarded as non-enteric. As to the mildness of some of the cases, it would be strange indeed if a large proportion of cases in an epidemic of enteric fever were not of a

mild type. Liebermeister says that some cases of typhoid fever are so mild as "scarcely to warrant the name of disease." According to Jürgensen, the fever in mild cases of typhoid fever sometimes subsides within twenty-four hours. Liebermeister asserts that the cases of febrile abdominal catarrh which he has met with belonged "without doubt in part to typhoid fever;" and again he says that it is not possible to draw a sharp line of distinction "between the cases of febrile and afebrile abdominal catarrh belonging to typhoid and those which simply depend upon catarrh of the stomach and bowels." The ratio between the proportion of mild and severe cases of typhoid fever referred to in my paper was not greater than is usually met with in outbreaks of typhoid fever. Six persons out of sixty-seven died, giving a mortality of nine per cent.—not a low one, considering that nearly all the persons affected were of the ages during which enteric fever is least fatal.

The Registrar-General, in a valuable paper on the Management of the Bowels in Enteric Fever, published in this Journal in February, 1877, says:—"I would assume that a patient with a quick weak pulse, furred tongue, loss of appetite, and who had been in the same state for a week, had enteric fever, unless there was good reason to believe to the contrary. If I find, on inquiry, that he had been chilly, had vomiting, pains, and either constipation or diarrhœa and irritation of the urinary organs, I would consider my diagnosis almost *certain*, even before I had an opportunity of testing the temperature and examining for an eruption, or ascertaining the nature of the discharge from the bowels." Accepting this view, put forth by Dr. Grimshaw, and bearing in mind that Professor Jürgensen states[a] that "if an attack of disease is to be regarded as arising from infection, transitions from the most slightly developed to the severest form must be demonstrated," I think I was fully justified in assuming that all the febrile attacks referred to in my paper were produced by an identical cause. A large proportion of them were admittedly severe and long-continued cases of enteric fever; and if, as Dr. Grimshaw suggests, a large number of my sixty-seven cases were merely cases of febrile gastro-enteric catarrh, there would have been no cases of mild, or abortive typhoid at all amongst them.

I quite concur in the observation of Dr. Grimshaw that distinct fevers, having characters very similar to enteric fever, may exist; I have expressed my belief in the existence of such fevers in the

[a] Clinical Lectures by various German authors. New Sydenham Society. Lond., 1877.

paper referred to by that gentleman. I do not, however, believe that any substantial portion of the disease which I attributed to the use of infected milk was other than typhoid fever. With respect to the objection which Dr. Grimshaw makes against the use of the word "typhoidal," I have only to say that I shall abandon it when all these fevers, which Dr. Grimshaw says have "characters very similar to enteric fever," have had their distinctiveness satisfactorily defined. In any case the word typhoidal may be employed adjectively (as I have used it) with as much propriety as the adjectives choleraic, catarrhal, variolous, scarlatinous, &c., now commonly employed.

ART. XIII.—*The Microcosm of Disease.*[a] By JOHN WILLIAM MOORE, M.D., Dubl.; Fellow and Examiner of the King and Queen's College of Physicians; Physician to the Meath Hospital and to Cork-street (Fever) Hospital; Lecturer on Practice of Medicine at the Carmichael College of Medicine and Surgery; Examiner in Materia Medica in the Queen's University in Ireland; Diplomate in State Medicine and Ex-Scholar of Trinity College, Dublin.

FOR some time past such expressions as "zymotic disease," "blood-poisoning," "germ theory of disease," "antiseptic medicine and surgery," and the like, have been on everybody's lips. It occurred to me, therefore, that it would be neither uninteresting nor uninstructive were I to give a brief summary of the present state of our knowledge respecting what may, perhaps, be termed the "Microcosm of Disease."

The Causes of Disease are, from a sanitary point of view, conveniently classified by Dr. John S. Billings, Surgeon in the United States Army,[b] into—(1) Hereditary; (2) Physical and Chemical; (3) Organised or Vital; (4) Mental or Emotional. The third class of causes—those which are known or supposed to be organised or vital in character, is the most important of all in public hygiene. To quote Dr. Billings—"Of the total sickness and mortality of the human race, a very large proportion is due to those diseases which may become epidemic, and these are of peculiar

[a] Being a portion of an Address introductory to the Session of 1879–80 in the Meath Hospital and County of Dublin Infirmary.

[b] Introduction to Dr. Albert H. Buck's Hygiene and Public Health, page 13. New York: William Wood & Co. 1879.

and special interest to the sanitarian, not only because of their frequency and the magnitude of their effects, but because it is believed that they are all more or less preventable, and because such prevention requires something more than individual action. The word 'epidemic,' as used here, means general, prevalent, affecting many people in a community, and, as applied to disease, it simply indicates its relative prevalence."

Dr. Billings further observes that the most important forms of this extensive group of epidemic diseases are those which are supposed to be due to specific causes, usually spoken of as "poisons," and which are classed by German writers as the *infective* (not, *infectious*) diseases. In many of these diseases the cause can reproduce itself without limit, thus presenting one of the characteristics of a living thing or organism; and in a few of them this living organism is known, forming the class of parasitic disease. We may divide the infective diseases into four classes—

a. Parasitic Diseases.
b. Contagium Diseases.
c. Miasmatico-Contagium Diseases.
d. Miasmatic Diseases.

That the cause of each of the three first classes is specific is inferred from the fact that the disease transmitted is always the same. There is no satisfactory evidence that any of these causes arise spontaneously; in every case the pre-existence of the specific poison or infective organism seems to be necessary.

In the majority of parasitic diseases we can recognise the causal organism apart from the diseases which it produces; and, in fact, as soon as we learn clearly the nature and life-habits of an organism causing disease and its mode of propagation, whether within or without the body, we look upon that disease as belonging to the parasitic group. Very probably some of the maladies now known only as members of the "contagium" or "miasmatico-contagium" series, will one day be transferred to the parasitic class, and this probability is expressed by what is known as the "germ theory."

A moment's reflection will convince us of the eminently practical nature of the inquiry into the origin of epidemic affections, and specially of the so-called "catching" diseases. This is well put by Dr. Burdon Sanderson, who says, in the introductory remarks to his Report on the Intimate Pathology of Contagion, "The question of the mode of existence of contagious matter lies at the foundation of all scientific inquiry as to the means of obviating or counteracting contagion."

At this stage of our investigations it will be well to refer briefly to the meaning of two terms, of which we shall have to say a good deal anon—*Fermentation* and *Decomposition*. In Watt's "Dictionary of Chemistry," Vol. II., page 624, 1872, we meet the following passage, which clearly explains what fermentation is:—"Certain organic compounds, when exposed to the action of air, water, and a certain temperature, undergo decomposition, consisting either in a slow combustion or oxidation by the surrounding air, or in a new arrangement of the elements of the compound in different proportions (often with the assimilation of the elements of water), and the consequent formation of new products. The former process, that of slow combustion, is called *Eremacausis*[a] or *Decay;* the latter is called *Putrefaction* or *Fermentation—putrefaction* when it is accompanied by an offensive odour, *fermentation* when no such odour is evolved, and especially if the process results in the formation of useful products; thus, the decomposition of a dead body, or of a quantity of blood or urine, is putrefaction; that of grape-juice or malt-wort, which yields alcohol, is fermentation."

It is now many years since the terms "Zymosis" and "Zymotic Diseases" were reintroduced into medical nomenclature. In the first instance, these words, which are derived from the Greek ζύμη, "leaven," were employed to denote a class of diseases, the process of development of which was regarded as analogous to the vinous fermentation. In this form of fermentation, as is well known, the introduction of the yeast plant—a microscopic fungus called *torula cerevisiæ*—into a saccharine fluid causes the conversion of the sugar contained in such a fluid into alcohol and carbonic dioxide or carbonic acid. The yeast plant itself flourishes and multiplies provided it meets with a suitable soil, containing nitrogenous elements to supply it with nutriment. Now, in certain diseases there is good reason to believe that minute living bodies or organisms—called "microzymes" by Dr. Burdon Sanderson, "microdemes" by Dr. Billings, and less accurately "bacteria" by many writers—if introduced into the blood are capable, *under certain circumstances*, of inducing a process of fermentation, accompanied by the formation of a poison or virus, which in turn produces in each disease a special train of symptoms. There are cases, also, in which these microdemes set agoing a fermentation *outside* the body, as in *septicæmia* or *septic infection*, the result being the production of a poison—*sepsin*—which, if introduced into the blood,

[a] ἤρεμα, "by degrees;" κάυσις, "a burning."

causes symptoms in proportion to the dose, for the septic poison is found to be incapable of self-multiplication. M. Pasteur applies the name "*Zymiques*," or "*Anaërobies*," to those organisms which act as ferments only when the air is excluded—those which require the presence of air to induce their action being distinguished as "*Azymiques*," or "*Aërobies*."

At the present day, however, the term "zymotic" is used in Dr. William Farr's Nosology in a much wider sense. It is almost synonymous with the term "Epidemic Diseases," as already defined, and is used to denote all the principal diseases which have prevailed as *epidemics* or *endemics*, and all those which are *communicable* either by human contact or by animals in a state of disease, as well as the maladies which result from the *scarcity and the deterioration of the necessary kinds of food*, or from *parasitic animals*. The diseases of the zymotic class thus arrange themselves into the four orders of *Miasmatic*, *Enthetic*, *Dietic*, *and Parasitic* disorders, of which *Fever*, *Syphilis*, *Scurvy*, and *Worms* may be regarded as the types.

The topics which we have now to consider in some detail are:—

I. The microphytes of the blood and their relation to disease.
II. The nature of the virus in the Contagium Diseases.
III. The practical bearing of the subject.

I.—The Microphytes of the Blood and their Relation to Disease.

Of late years the attention of thoughtful and scientific members of the medical profession has been repeatedly drawn to the possible connexion between diseased states and the presence of microscopic organisms or microphytes in the blood. In the first part of a Memoir on the Microzoa and Microphytes of the Blood,[a] Dr. T. Richards Lewis writes—"The forms of plant-life which have been recognised as having been more or less closely associated with changes in living animal substances are the lower kinds of fungi. These Nägeli[b] separates into three groups: (1) *Moulds*, characterised by branched, segmented, or unsegmented filaments; (2) *Sprouting Fungi*, yeast cells of various kinds, consisting of more or less oval corpuscles, which multiply by means of sprouts from their

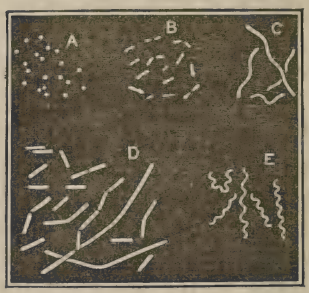
[a] Appendix to the Fourteenth Annual Report of the Sanitary Commissioners with the Government of India. Reprinted in the Quarterly Journal of Microscopical Science, July, 1879, p. 356, *et seq.*

[b] Die niederen Pilze in ihren Beziehungen zu den Infectionskrankheiten und der Gesundheitspflege. München. 1877.

surfaces; and (3) *Cleft-fungi* or *Schizomycetes*, minute spherical or oval bodies, which are multiplied by fission only, and which sometimes remain isolated, at others form unbranched rows (rods, threads, &c.), but only occasionally present a cubiform aspect. To this group the *bacterium*, *vibrio*, *vibrio-bacillus*, *spirillum*, &c., belong."

It is only the various forms of the third of these groups—the *cleft* or *fission-fungi* (*Schizomycetes*, of Nägeli, from σχίζω, "I cleave," and μύκης, "a mushroom," or "fungus;" *Schizophyta* of Cohn of Breslau)—which have, up to the present, been unequivocally found in the blood. The recognised forms of cleft-fungi are: (1) *Spherical Bacteria*, minute vitalised bodies, barely visible with the highest microscopical powers (Fig. 1, A); (2) *Elongated Bacteria*, almost equally minute cylindrical rods (Fig. 1, B); (3) *Vibriones*, short, undulating filaments manifesting somewhat screw-like movements (Fig. 1, C); (4) *Bacilli* or *Vibrio-bacilli*, fine, short filaments, indistinctly jointed, which, when they attain considerable length, are sometimes described as *leptothrix* filaments (Fig. 1, D); (5) *Spirilla*, fine, more or less flexible, spiral filaments, which manifest well-marked screw-like movements (Fig. 1, E)—Lewis.

Fig. 1.



Various forms of Cleft or Fission-Fungi (*Schizomycetes*). A, Spherical Bacteria (*Bacterium punctum*); B, Elongated Bacteria (*Bacterium termo*); C, Vibrions; D, Bacilli; E, Spirilla. × 600 diam. [After Lewis.]

Examples of each of these forms of cleft-fungi may commonly be detected in the ordinary muco-saliva from the mouth of healthy persons, but they are either absent from the blood in health, or if they enter the *liquor sanguinis*, through the lungs, or from the intestinal mucous membrane, they speedily disappear, should the plasma of the blood be healthy. In certain diseased conditions, however, microphytes are generally, though perhaps not always, present in the blood. At the same time, in cases where they are

found, no direct connection seems to exist between their number and the gravity of the malady.

It has been clearly established that one or more of the forms of cleft-fungi have been found in the blood in two diseases—viz., *malignant pustule* and *relapsing fever*. M. Pasteur has recently maintained that a third should be added to the list—*septicæmia;* and, still more recently, a fourth has been added by Dr. Klein—namely, the disease commonly known as "*typhoid fever*" of the pig.[a] With this class of disease also, some authors, such as Oertel, Klebs, and others, would rank *diphtheria*, and quite lately *malaria* has taken its place among the microphytic affections, as have also *noma*—or *cancrum oris*—and *autumnal diarrhœa.*

SPLENIC FEVER.

(1.) In the blood and fluids of animals and men affected with Malignant Pustule, or, to use a more scientific name, Splenic Fever, the *Milzbrand* of the Germans, the *Charbon* or *Mal de Rate* of the French, are commonly found peculiar organisms termed *bacteridia* by Davaine, whose researches first drew serious attention to the subject. In 1875 Professor Ferdinand Cohn published the result of his examinations of these organisms, and having pronounced them to be *bacilli*, suggested that they should bear the name *Bacillus anthracis.* A great difficulty had long before arisen in connexion with this theory of the origin of splenic fever. It was observed that although the contagious properties of the blood of affected animals soon disappeared, yet the contagion of the disease seemed to cling with great tenacity to certain limited localities, as, for instance, to a particular stable, where it would reappear after long intervals—sometimes three or four years. This difficulty threatened to prove fatal to the theory of the microphytic origin of splenic fever; but in 1876 Dr. Koch, of Wollstein (Posen), announced his ability to demonstrate the existence of *resting spores* of the *bacillus anthracis*, which had the power of retaining their vitality for a long time—at least four years, and of giving rise to a new generation of bacteridia. This afforded a ready and satisfactory explanation of the peculiar localised persistence of the contagium of splenic fever. Nor is there anything more wonderful in the existence of these resting spores of disease than is commonly observed in seeds, in animal ova, and in roots. "Thus," says Dr. Graves,[b]

[a] Lewis, loc. cit. P. 361.

[b] Studies in Physiology and Medicine. London: J. Churchill & Sons. 1863. P. 211.

"the curious fact has been observed of a bulbous root, taken from the hand of an Egyptian mummy, having germinated when placed in the soil. How happened it that this bulb remained for several thousand years in contact with the fingers of death, without its own vital principle being either extinguished or called into active operation? What power at once preserved that principle and held it in abeyance? And yet so it was. And age after age passed away without summoning into action that wondrous spell which could thus convert this long-enduring tenant of the tomb into the lily of the field, the Scriptural emblem of beauty, and the honoured type of the glories of vegetable life, beside the purity and brightness of whose hues even the raiment of Solomon appeared dull and faded."

MALARIA.

(2.) In 1866 Salisbury published a paper in the *American Journal of Medical Sciences*, in which he endeavoured to show that the poison of Malaria consisted of the spores of *Palmella*, a species of alga. He was, no doubt, wrong in regarding the malarious poison as a palmella, but he may have been right in looking upon it as a kind of alga. In 1875 some researches were made by M. Lanzi and G. Terrigi, which led them to look upon the poison of malaria as of vegetable origin. In the spring of the present year (1879) Professor Klebs and Signor Tommasi-Crudeli instituted a series of beautiful experiments, which have proved to their satisfaction that certain organisms belonging to the genus *Bacillus* are the true cause of malaria. These organisms, which they propose to call *Bacilli malariæ*, since they have seen them develop within the bodies of animals infected by malaria, are to be found in the infective liquids obtained by the earth from the air, and by cultivation as in the bodies of infected animals. In the soil of malarious regions they are found in the form of numerous spores, which have the power of independent motion, and strongly refract the light. These spores develop into long filaments, which are at first homogeneous, but subsequently undergo transverse fission, which converts them into a chain. In the interior of each link of this chain new spores then develop.

The greatest development of the *Bacillus malariæ* in the bodies of infected animals occurs in the spleen and medulla of the bones. This fact is noteworthy, since it is precisely in these organs that the most characteristic anatomical alterations are to be found, in consequence of grave malarious fevers in man.

TYPHOID FEVER OF THE PIG.

(3.) In February, 1878, Dr. E. Klein, F.R.S., brought before the Royal Society a portion of the result of an experimental inquiry (which had been conducted for the Medical Officer of the Local Government Board) into the etiology of a disease sometimes described as "Typhoid Fever of the Pig," also as "Hog Plague," "*Mal rouge*," "Red Soldier," and "Malignant Erysipelas." Dr. Klein, however, proposes to show that the disease is not typhoid fever, nor yet anthrax, but an infectious disease of its own kind, which he proposes to call "Infectious pneumo-enteritis" of the pig (*Pneumo-enteritis Contagiosa*).[a] In this disease the peritoneal exudation always contains the virus in an active state, whereas the fresh blood as a rule neither contains any foreign matter nor possesses any infectious property. Dr. Klein, as the result of seven cultivation experiments performed by him, concludes that the virus can be cultivated artificially—*i.e.*, outside the body of the animal. He states that the cultivated liquids proved, on microscopical examination, to be "the seat of the growth and development of a kind of bacterium which has all the characters of *Bacillus subtilis* (Cohn)." The fine (hence the qualifying affix *subtilis*) rods or filaments of this bacillus under favourable circumstances grow into leptothrix-like filaments just as other bacilli are known to do. "In these filaments," writes Dr. Klein, "highly refractive spores make their appearance. These become free after the disintegration of the original filamentous matrix." Dr. Klein concludes his paper thus:—"Seeing that splenic fever, pneumo-enteritis, and specific septicæmia possess a great affinity in anatomical respects, and seeing that in splenic fever and pneumo-enteritis there is a definite species of *bacillus*—the difference of species being sufficiently great to account for the differences in the two diseases—we may with some probability expect that also the third of the group—viz., specific septicæmia, is due to a *bacillus*. This, however, remains to be demonstrated."

SEPTICÆMIA.

(4.) As Dr. Billings well observes,[b] Septicæmia, "Blood-poisoning," or, as it is more accurately called, "Septic Infection," is a disease of great importance, in part because it occurs everywhere

[a] Experimental Contributions to the Etiology of Infectious Diseases, with special reference to the Doctrine of Contagium Vivum. Quarterly Journal of Microscopical Science. April, 1878. P. 170.

[b] Loc. cit. P. 24.

and at all times, constituting an ever-present danger, especially in surgical and puerperal cases; in part because we have now good reason to believe that it can be prevented in the great majority of instances. The disease seems due to a poison or virus produced by microphytes, but in which the elaboration of the poison does not occur, at least does not usually occur, within the body. The symptoms are therefore generally proportionate to the dose of the poison received into the system. Septicæmia is defined by Dr. Burdon Sanderson to be "a constitutional disorder of limited duration, produced by the entrance into the blood-stream of a certain quantity of septic material."

"This septic poison," writes Dr. Billings, "may be separated from putrefying material by chemical processes, and obtained in the form of a transparent fluid. This fluid contains no germs in the sense that a germ is that which produces an organism, but it does contain a specific, virulent something, which can be separated from it by a porcelain filter, and which does not multiply and reproduce itself. The 'sepsin' is not then the cause, but the result, of putrefaction, and when introduced into the living body its effects are in proportion to the quantity introduced, like those of a chemical poison."

In an important paper,[a] submitted to the French Académie des Sciences in 1877, MM. Pasteur and Joubert gave a histological account of the *vibrions de putréfaction*, mobile organisms of the cleft-fungi group, which are now regarded as the ferment in the elaboration of the septic poison. In all cases of septic infection, in addition to the growth of microphytes—the "vibrions de putréfaction"—and the elaboration of their specific products, *sepsin*, whether without or within the body, it is necessary to the production of the septic symptoms that the condition of the tissues and vessels shall be such as to permit the entrance of the septic poison into the blood. We shall presently have to return to this subject.

DIPHTHERIA.

(5.) In a paper on the "Specific Origin of Diphtheria,"[b] Drs. Cossar Ewart and Malcolm Simpson, having alluded to the investigations of Oertel and Klebs and others, put forward the view that this deadly disease is, in all probability, set up by a specific organism

[a] Comptes Rendus. Tome LXXXV., p. 101. July 16, 1877.
[b] Brit. Med. Jour., Sept. 7, 1878, page 367.

which exists in the form of solid particles suspended in certain atmospheres. These particles exist as exceedingly minute spores, scarcely larger than the smallest forms of micrococci, but capable of germinating into long excessively fine bacilli whenever they reach a suitable medium or soil, such as is provided for them on the surface of the tonsils, soft palate, or pharynx, when from any cause the superficial epithelial cells, or the cells surrounding or lining the mucous glands, have undergone partial destruction. When the spores reach the surface of a mucous membrane in this condition, they at once germinate into bacilli, which, by transverse fission, rapidly increase and penetrate the epithelial layer at least as far as the rete Malpighii. While this is going on, partly as the result of the irritation set up, the lymph spaces in the mucous and submucous layers are greatly distended, the vascular supply is thus cut off, and the whole tissue is destroyed—in other words, converted into a diphtheritic or false membrane. Besides these local changes, constitutional symptoms supervene, which resemble in many ways the symptoms of blood-poisoning, and probably result from the absorption of a virus formed during the growth and development of the organisms. The life-history of the bacillus of diphtheria is the same as that of the *bacillus anthracis;* but when the spores were applied to a raw surface, instead of setting up splenic fever, they rapidly led to the formation of a diphtheritic membrane.

RELAPSING FEVER.

(6.) In the diseases we have been considering, the microphytes or microdemes belong to the bacillus species of the cleft-fungi. To Relapsing or Recurrent Fever, another species, the spirillum, seems so intimately and constantly related that the disease is now coming to be known as "Spirillum Fever." Under this title Dr. H. Vandyke Carter lately described an epidemic which prevailed at Bombay in 1877.[a] At the beginning of 1873 the late Dr. Obermeier, of Berlin, first drew attention to the occurrence in the blood of patients suffering from relapsing fever of peculiar vibrio-like bodies, which closely resembled the *Spirillum* (*Spirochæte*) *plicatile* which had been found by Ehrenberg in water many years ago. Dr. Carter thus describes this fission-fungus, which is now generally known as the *Spirillum Obermeieri:*—

"Its ordinary aspect is that of a colourless, homogeneous, and

[a] Notes on the Spirillum Fever of Bombay, 1877. Medico-Chirurgical Transactions. Vol. LXI., page 273. 1878.

very delicate, spirally-twisted filament, which, during life, is in constant motion amidst the *liquor sanguinis;* the length varies from $\frac{1}{1300}$th inch to $\frac{1}{300}$th inch; its breadth is immeasurably slender, or probably not more than the $\frac{1}{40000}$th to the $\frac{1}{30000}$th inch. The spiral or corkscrew twist is regular and best seen when the organism is quiescent or after its death, whilst during active movement (especially the lashing side movements) it becomes undone and may almost disappear—the filament meantime gaining in apparent length. The motion of the spirillum, though continuous, is transiently intermittent and not constantly in the same direction; it is compounded of a rotation on the long axis—which is the most characteristic—a lateral or lashing movement, and a progression forwards or backwards; all these actions may be so rapidly performed as to puzzle the eye of the observer, who sees only swarming or shooting non-defined bodies traversing the field of the microscope."

Dr. Carter states that the number of spirillar bodies in the blood of a patient suffering from this specific fever is simply immense, and often incalculable except by hundreds of millions. Dozens may be seen in the field of the microscope at one time, troubles of the circulation being clearly enough indicated in the patient's dusky and harassed visage; on the other hand, the spirilla may be rare, and to be found only after very patient search. Doubtless a relationship obtains between the abundance of the parasite and the intensity of the fever, but it is a contingent one, for Dr. Carter has observed the spirillum to be tolerably numerous during collapse (temp. 95° F.) and at ordinary temperatures, while a rise in heat when considerable (105° to 106°) may be attended with a positive diminution in the numbers of the organisms, and is consistent with their entire disappearance. Commonly, however, pyrexia and parasite are in closest relationship at particular times.

CANCRUM ORIS.

(7.) Noma, or Cancrum Oris, would seem to be one of the diseases in which organisms are often present in the fluids of the body. Dr. A. E. Sansom has recently published in the *Medico-Chirurgical Transactions*[a] a case of noma in which moving bodies were observed in the blood during life. They were small, highly-refractile bodies endowed with powers of rapid locomotion. On account of such motion the exact shape of these bodies was difficult to determine, but, when comparatively still and a little out of focus, each one

[a] Vol. LXI., p. 1.

refracted light in such a manner that a small bright cross was visible in its surface. Thus they resembled crystals of oxalate of lime, with the exception that they were not perfect octahedra, but appeared as fragmentary crystalloids.

The movement of these bodies resembled that of very minute bacteria. It was lineal and sometimes opposed a current in the fluid; thus, two or three which were observed to be attached to a red blood-corpuscle were seen to move the corpuscle in a direction opposite to that in which many other corpuscles immediately surrounding it were carried.

AUTUMNAL DIARRHŒA.

(8.) Autumnal Diarrhœa, that plague of infant life in large towns, has lately been added to the list of microphytic diseases. Dr. William Johnston, Assistant Officer of Health for Leicester, where diarrhœa is each year terribly destructive to infant life in the warmer months, concludes,[a] as the result of lengthened investigations, that (*a*) diarrhœa, as it affects both adults and infants during the warm months, owes its origin in a great majority of instances to the introduction of minute living organisms (bacteria of the genera *Micrococcus* and *Bacterium termo*) into the system by means of air or in food (especially milk); and (*b*) the disease depends on putrefactive changes in the bowel contents, which changes are correlative to the development and multiplication of these microscopical organisms.

II.—The Nature of the Virus in the Contagium Diseases.

With the phenomena presented by the diseases which are accompanied, or may be caused, by the presence of microphytes in the blood, let us now briefly compare those presented by the Contagium Diseases, of which variola or smallpox may be regarded as the paradigm or type.

About fifteen years ago the first systematic attempts were made by Dr. Chauveau, of Lyons, to determine the nature of the contagium or virus of smallpox and of vaccinia. The result of Chauveau's experiments was to prove that the contagia of these diseases were insoluble, for water brought into contact with vaccine lymph or with variolous lymph did not become impregnated with the virus of vaccinia or of smallpox. Dr. Burdon Sanderson has since

[a] The Causes of Diarrhœa prevalent at Leicester. Sanitary Record, Aug. 15, 1879, p. 43.

confirmed Dr. Chauveau's experiments, and thus it has been proved that contagium is *particulate*. It has also been demonstrated that the infective particles are extremely minute, so that they can be readily diffused through a fluid or remain suspended in the air for a considerable time like the tiny motes seen floating in a sunbeam. Again, there is evidence to show that the infective particles are living—a *contagium vivum*—for when placed upon a suitable soil they grow and multiply to an indefinite degree. In vaccine virus the power to transmit the specific disease is lost after exposure to a heat of about 140° F., but it is not injured by intense cold. In a lecture on the "Intimate Nature of Infection and Contagion," delivered before the King and Queen's College of Physicians in 1878, Dr. T. W. Grimshaw, now Registrar-General for Ireland, observes:—"The first attempts to connect the development of fungi with any specific form of zymotic diseases seem to have been by Dr. Cowdell, of Dorchester, who suggested the idea in 1848. In 1849, Drs. Brittan and Swayne, of Bristol, believed that they had discovered vegetable organisms which bore some relation to cholera. I think the first substantial attempt to connect the origin of any specific febrile zymotic with a fungoid growth was made by Dr. Salisbury, of Newark, Ohio, in 1862,[a] who suggested that the origin of camp measles was connected, by the contact of those attacked, with damp straw upon which certain fungi (*puccinia graminis*) had been developed. Following up his inquiry, Dr. Salisbury discovered that he could by inoculation with the spores of those fungi produce a disease very similar to, if not identical with, measles, and which conferred immunity from other attacks of measles. Although Dr. Salisbury has not produced any evidence of the growth of these fungi in the human body, he has given very substantial proof of their power to produce measles; but he has not proved that the contagium of measles is identical with the fungus or its spores produced on damp straw."[b]

As a matter of fact, in measles and scarlatina the contagium has not up to the present been isolated as in smallpox. The minute particles of this last-named disease come under Dr. Billing's definition of "microdemes," but there is no evidence whatever that they can multiply or in any way reproduce themselves outside the living body, or that they can be classed with the schizomycetes or other

[a] The American Journal of the Medical Sciences. July, 1862, and October, 1862.

[b] The Action of Vegetable Fungi in the Production of Measles and Allied Diseases. See also Dr. Tilbury Fox in the Journal of Social Science. Vol. I. No. III.

forms of microphytes. This incapability of reproduction outside the body constitutes one of the characteristics of the contagium diseases, which also as a rule attack an individual but once in his lifetime.

Before I pass on to say a few words as to the bearing of the foregoing doctrines upon the practice of Medicine and Surgery, it is fitting that I should mention one other theory which has been put forward as to the nature of contagium. Dr. Lionel Beale has advanced the view that the contagious particles are composed of *living matter* of animal origin, born in and growing only in the body—they are, in fact, minute portions of what he has termed "germinal matter," "bioplasm," or "protoplasm." He says:[a]—"Living matter or bioplasm constitutes those minute particles known as *disease germs*, which are the agents concerned in propagating all contagious diseases. Having escaped from the infected organism, the particles of contagious bioplasm, often less than the $\frac{1}{100000}$th of an inch in diameter, may be wafted by currents of air, perhaps through very considerable distances. If any of them accidentally come in contact with an organism in a state favourable to their growth and multiplication, they may pass into the blood, grow and multiply, and establish a state of disease like that existing in the organism whence they were derived."

III.—The Practical Bearing of the Subject.

In the foregoing observations I have sought to epitomise the present state of our knowledge respecting the organised or vital causes of disease. We have seen that there is good reason to believe that in the septic group of diseases, in relapsing fever, in malaria, in noma, and in some forms of diarrhœa, the presence of microphytes in the blood or other fluids of the body has an intimate causal relation to the phenomena of these several affections—the microphytes either exciting the disease themselves, or playing the part of a ferment which sets agoing the development of the specific poison or virus of the malady. We have seen also that in the contagium diseases the contagium is particulate, incapable of reproduction outside the body, and although not referable to the lower forms of fungi, nevertheless a "contagium vivum," growing and multiplying indefinitely when placed upon a congenial soil.

What, then, is the practical bearing of these researches? The expressions "Preventable Disease" and "Preventive Medicine"

[a] Life Theories: their Influence upon Religious Thought. Page 69. London: J. & A. Churchill. 1871.

have of late years become "familiar as household words," and I cannot help thinking that they are now likely to acquire a fuller and more precise meaning than they have ever possessed in times past. It is true there are some men even at the present day—conscientious, intelligent, and otherwise well-informed men—who object to the use of such a phrase as "Preventable Disease" on the ground that it is—to say the least—irreverent. They point to that close analogy which exists between the moral nature and the physical nature of man, both subject to laws which cannot be broken or violated with impunity. Any infringement of the Divine Moral Law is followed by spiritual disease and death. No less certainly will the violation of the equally Divine Physical Law, subject to which we live and move and have our being, be followed by bodily disease and death. "The soul that sinneth, it shall die!" Ah, yes, but do those who use this argument, so solemnly, so fatally true, forget the glorious antithesis—God is "*not willing* that *any* should perish"? And so I believe that every earnest effort made to *prevent* disease, and the misery it brings in its train, has the Divine sanction and approval.

In striving to attain the prevention of disease, we may hope (1) so to modify the nature of the contagium as to render it inert or comparatively innocuous; (2) to destroy it absolutely either (α) without the body or (β) within the body; (3) so to counteract its effects upon the organism as to save the patient's life or even cause the symptoms quickly to disappear.[a]

(1.) In the case of smallpox alone up to the present time have we been able to modify the contagium in the direction just indicated. Time will not permit me to detail the results of vaccination, and the wonderful influence for good it has exercised in the vast majority of instances.

(2.) We seek to destroy contagium without or within the body by disinfectants or by antiseptics. Nor must we confound these words. The general term "Disinfectant" includes three classes of chemical agents in addition to the physical agents—fresh air and heat:—I. Bodies which remove bad smells, or *deodorants*. II. Substances which check, or wholly prevent, decomposition, or *antiseptics*. III. Bodies which exert a destructive action upon living microdemes and upon dead organic matter, or *true disinfectants*.

"Antiseptic Surgery" is the term applied to two apparently diverse methods of prevention of blood-poisoning during and

[a] *Cf.* Grimshaw. Loc. cit.

after surgical operations. The first is the well-known method of Lister, with its many modifications. It aims at totally preventing the contact of living microphytes with an injured surface. The second is the "air-dressing," which aims at the freest possible exposure, in order that all dead and septic matters may easily and rapidly escape. Both these methods have given excellent results, and—as Dr. Billings[a] well observes—"so long as only the ordinary microdemes of all air and water are present, the difference between the results obtained by these apparently opposite methods is not great; but so soon as the element of specific contagium comes in, the only hope of safety lies in the absolute exclusion."

(3.) As an illustration of a drug counteracting the effects of a microphytic disease upon the system, I may refer to the action of quinine in malaria.

"The quinine, when swallowed, will be absorbed like the spores themselves, and, by preventing their multiplication or actually destroying them, will tend to prevent their getting into the general circulation, and there doing mischief. We can understand also the action of quinine as a prophylactic, because, if steadily taken, the spores, when swallowed, will find themselves in a fluid unfavourable to their growth, and thus be prevented from multiplying at all. But quinine sometimes does not act, or does not act at all well, unless its action be aided by the use of an emetic or purgative. These remove from the body a quantity of bile, and with it they will probably remove a number of malarious spores, and the multiplication of those which are left may be controlled by means of quinine, although previous to the removal of the bile the quantity of spores contained in the portal circulation was too great to be kept completely under by the quinine. In places where quinine is unknown, or not readily obtained—as in Morocco—ague is cured by the use of emetics and purgatives alone."[b]

Did time permit, we could easily multiply examples of the practical utility of the inquiry into the etiology of disease; but those which have been given must suffice at present. The knowledge we possess is small, and, as an author, whom I have already had frequent occasion to quote in this address, remarks, "our hope of substantial scientific progress in knowledge of the causes of disease rests mainly on two methods as yet little used—namely, on the *registration of disease* and on *comparative experimental pathology*."

[a] Loc. cit. P. 25.

[b] The Practitioner. August, 1879. Page 118.

I would wish to conclude this notice of the "Microcosm of Disease," and of the lessons it teaches, by quoting a short passage from a discourse delivered some years ago, in the Theatre of the Royal Dublin Society, by a physician who was well known in this hospital, and indeed throughout the civilised world. The author to whom I allude remarks:[a]—

"Till the germ theory of contagion is established, till we know more of germ life, and of what preserves, what destroys it, and what replaces the latent by the manifest life, I believe that we must mainly trust to disinfection, to cleanliness in the *widest* acceptation of the word.

"It may yet happen—and God forbid that its possibility should be denied—that science will discover the essence of these affections, and, with that, the means of preventing and extinguishing them. When that is accomplished, Preventive Medicine will be employed directly, as it is now indirectly. Till that time comes, however, there is a great work for us to do. We have, on the one hand, to labour patiently, and in a severely inductive spirit, in the study of the natural history of epidemics, and their comparison in various portions of the world, avoiding conjecture, and honestly accumulating and analysing facts, which, thus treated, will in time crystallise into discovery."

The writer of these weighty, almost prophetic, words was William Stokes—a name amongst the most illustrious in the heraldry of this hospital, in which, as physician, during well-nigh half a century, he acquired a wonderful experience of the natural history of disease. Far in advance of his contemporaries, his mind with eagle glance gazed into the future, foreseeing a time when modern methods of research would pour a flood of light upon the causes, and, as a consequence, upon the preventive treatment of disease. He lived only to reach the borders of that Promised Land, for even of earth's best and greatest the words are true—

"All that lives must die,
Passing through Nature to Eternity."

So he, too, passed away—to use the words in which he himself spoke of another—"after a long and splendid life of deserved and almost unexampled success, with 'honour, love, obedience, troops of friends.'"

[a] On Sanitary Science in Ireland. By William Stokes, M.D., D.C.L., F.R.S. Dublin: Hodges, Foster, & Co. 1874.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Injuries and Diseases of the Lymphatic System. By S. Messenger Bradley, F.R.C.S. London: Churchill. 1879. 8vo, pp. 144.

This work, which the author tells us has been written with the purpose of supplying a gap in English medical literature, is for the most part a compilation, containing as original matter only a few cases and some theoretical considerations. Even as a compilation we cannot afford it very high praise. Many diseases not generally looked on as belonging to the lymphatic system, such as glanders and erysipelas, are described as such, while certain other affections, whose connexion with the lymphatics is of the greatest importance, are altogether omitted. As an example of this we would cite Poufick's discovery of the presence of tubercle in the walls of the thoracic duct in cases of general acute tuberculosis—a discovery which throws in many instances much light on the distribution of the tubercular eruption.

The first chapter deals with the anatomy and physiology of the lymphatic system, including the abnormalities in the arrangement of its various parts.

In the second chapter, dealing with lymphorrhœa and lymphangioma, an account is given of lymphatic fistula, whether arising from injury or disease, and of the various forms of dilatation of the lymphatic vessels, whether simple, cavernous, or cystoid. In this chapter we find some curious views put forward as to the causation of certain forms of dropsies of the serous cavities. The author says (p. 26):—"Before leaving the subject of lymphorrhagia I wish to refer briefly to the probably lymphatic origin of certain cases of hydrocele, hydrocephalus, pleurisy, and peritoneal dropsy—in a word, I am of the opinion that these so-called dropsies are not unfrequently cases of lymphorrhœa. It is well known that the serous sacs of the body, besides being prone to acute inflammatory disease, are subject to certain forms of (so-called) dropsy. A chronic hydrocephalus manifests itself in the arachnoid cavity of a child, or a latent pleurisy mysteriously collects, or the tunica

vaginalis becomes painlessly distended with hydrocele fluid. How has this happened? Is it not at least probable that in each a lymphorrhagia has taken place? A little hypersecretion or a little obstruction in the lymphatics at some distance from the serous sac would alike explain the back flow of lymph through the open stomata of the vessels into the closed bag so near at hand."

Independently of the objection to this view, founded on the fact that the fluid found in the serous sacs under such circumstances is not lymph, we think that both the forces which maintain the lymph in circulation, and still more the arrangement of the valves in the lymphatic vessels, even those of very small size, are such as to make the supposition of such a backward flow of lymph altogether untenable. In other parts of his book Mr. Bradley puts forward somewhat similar theories. He explains the suppurative arthritis sometimes met with in cases of gonorrhœa by the "direct conveyance of the pus, &c., from the urethral mucous surface along the lymphatic vessels, whence it travels towards some neighbouring joint." And again—"In the same way I think we may explain the joint affections in acute rheumatism—*i.e.*, by supposing that the *materies morbi* travels chiefly by the lymphatic vessels, hence the tendency to serous inflammation, the poison being poured from their open mouths into the different serous sacs of the body" (p. 66). Such opinions, we think, indicate a total misconception of everything that is known as to the lymphatic circulation.

In the third chapter, under the name of lymphatic œdema, is described the disease usually known as elephantiasis Arabum. The author thinks this condition consists essentially in obstruction of some lymphatics with dilatation of those of the skin and subcutaneous tissue, and "resultant hyperplasia of epiderm and derm." He does not admit the distinction drawn by Mr. Hutchinson between the smooth and tuberculated varieties of the disease, and speaks rather unfavourably of the treatment by ligature of the main arteries, putting his faith chiefly in methodical frictions and bandaging of the diseased part, combined with the use of iodine, iodide of potassium, and mercury.

The fourth chapter treats of simple lymphangitis or angeioleucitis. On p. 68 we find the following sentence:—"Between erythema and erysipelas, I repeat, I can find no hard and fast line except the contagiousness of the latter, which property is due, as I believe, to the presence of putrefaction, and the consequent presence of a *contagium vivum* or organic germs." Not to say anything

of the strange theory which makes the organic germs *consequent* on the putrefaction, instead of, as is generally done, making the putrefaction to depend on the germs, we think the distinction laid down by the author is quite hard and fast enough to satisfy the most exacting nosologist.

In chapter five, headed septic lymphangitis, a number of diseases are considered, as glanders, anthrax, snake bites, erysipelas, puerperal peritonitis, and, at less length, the plague, typhus, diphtheria, and typhoid fever. Our space does not permit us to go through this chapter, and to show the various points in which we find ourselves at variance with the author. We must, however, notice two or three such. The statement that it is the rule rather than the exception for septic matter to be absorbed through an unbroken surface is, we believe, opposed to all experience. Every student who has spent a session in the dissecting-room knows that so long as the skin of his hands is sound he is almost certainly safe. That in some cases infection has occurred through an unbroken surface we do not deny, but we maintain that such are, comparatively speaking, infinitely rare; and even in the instances in which such has seemed to occur the proof is difficult, for the small opening necessary to admit the poison may well heal before the supervention of symptoms calls attention to the fact of any poisoning having taken place. The analogies adduced in support of this view are, we think, most fallacious. The volatile poisons of the zymotic diseases, as smallpox, typhus, &c., are altogether different from that generated by putrefaction in a dead body. Besides, in these the absorption is not through the skin, but through a mucous membrane, as that of the alveoli of the lungs, where the conditions for absorption are very different from those existing in the skin. In gonorrhœa there is no absorption at all, but simply an inflammation of the mucous surface with which the poison comes directly in contact, and the fact of the absorption of syphilitic virus through an unbroken skin is altogether too doubtful and too much in need of support itself to be used as a prop for any theory.

As regards erysipelas, we are not quite sure that we understand the author's views. They seem, however, to be this:—Erysipelas involves previous putrefaction, all those rednesses which we see about wounds which are not putrid, and that affection which is generally known as idiopathic erysipelas, such as ordinary facial erysipelas so-called, are not erysipelas at all, but simple lymphangitis, and non-contagious. Until this view is more strongly supported

than by the arguments brought forward in the work before us, we should be sorry to expose patients with open wounds to the risk, as we believe, of contact with a case of idiopathic erysipelas. From one of the cases given it would appear that the author judges of the presence or absence of putrefaction in a wound, not by the unaided use of his eyes and nose, as most surgeons do, but by Nessler's test and the microscope, although he does not state how these means are employed for the purpose.

The remaining chapters, four in number, treat of the diseases of the lymphatic glands. This portion of the work does not call for much comment. The description both of the pathological changes and of the clinical history seem to us very meagre and incomplete. This is particularly so in the parts dealing with leucocythæmia and Hodgkin's disease.

In conclusion, we regret not to have been able to speak more favourably of this work. From the quotations we have made it will, we think, be admitted by most persons that very many of the author's views are not such as can be admitted in the present state of our knowledge of physiology and pathology; and as a compilation of the views and observations of others, we fear the work under notice is too incomplete and ill-arranged to be of any real utility.

Journal of the Scottish Meteorological Society. New Series. Nos. 55—59 inclusive. Edinburgh and London: William Blackwood & Sons. Folio.

THESE numbers of the well-known "Transactions of the Scottish Meteorological Society" contain, as usual, several papers of much interest from a medical point of view. We can do little more than name those which appear particularly deserving of study by physicians. "Weather and Health of New York (U.S.) compared with London," written jointly by Mr. Buchan, the Meteorological Secretary, and by Dr. Arthur Mitchell, is a valuable contribution to Vital Statistics. This paper is illustrated by curves, and the authors arrive at the following conclusions:—

"June is the healthiest month in London. It is a healthy month in New York also, so far at least as regards the first half of it. May is much less healthy than June in London, but in New York it is as healthy. The healthiest period of the year, however, in New York are the months of October and November, and the corresponding period of healthiness in London is the month of September.

"The broad fact which the two diagrams disclose is that the New York curve receives its leading characteristics from a great fatality there of diseases which have their maxima as causes of death in the hot months (diseases of the abdominal organs), and that the London curve receives its form from a comparatively lower fatality of such diseases, and a comparatively higher fatality of the diseases which have their maxima as causes of death in the winter and spring months (diseases of the respiratory organs and of the nervous centres).

"The range of the death-rate is in the great majority of cases considerably larger in New York than in London. The range is, however, smaller as regards bronchitis and heart disease, to which fall to be added the nervous diseases, if the high summer death-rate from these diseases be kept out of view. The periods of maximum and minimum death-rate at New York occur a little earlier than in London as regards diarrhœa, phthisis, and typhoid fever; but as regards measles, diphtheria, pneumonia, and apoplexy, these phases occur somewhat later. There is a substantial if not a close agreement between the curves of mortality from the different diseases for the two cities, with, however, two notable exceptions. These exceptions are scarlet fever and whooping-cough, since, as has been pointed out, the maximum of scarlet fever for London is coincident with the minimum for New York; but the highly important distinction holds good as regards each of the two cities—the maximum mortality from the one occurs at the same time as the minimum mortality from the other disease."

"The Climate of Cyprus," by Mr. Buchan, was written in response to an application for information on the subject made by the Intelligence Branch of Her Majesty's War Office on the occupation of that Island by the British.

Dr. Arthur Mitchell and Mr. Buchan also contribute a very interesting article on the Great Plague of London in relation to weather. They conclude by saying—

"There is little doubt that the Plague of London was the same disease as that which long presented itself nearly every year to a greater or less extent in Egypt and Turkey; and it is interesting to know that the study of the disease there and in the south of France led to a conclusion, which is very generally accepted, that it could not maintain its energy with a temperature below 60° or above 80°. It is even held by some writers that it cannot possibly co-exist with a temperature below 60° or above 80°. It was a practical expression of the belief in this which made the Turkish Government announce yearly to the people, by a discharge of cannon on the 24th of June, when the temperature of 80° began to be of frequent occurrence, that the plague was about to subside. So far as

concerns the observations made in this country, with its colder climate, this belief is supported to the extent that there is never a rise of the mortality from plague till the temperature rises to 60° in the middle of June."

The last paper we would name is one by Professor George Forbes, entitled "Observations Relative to the Temperatures to which the Human Body is Exposed." It contains an account of a suggested form of thermometer for registering the warmth of the air as it is felt by our bodies.

RECENT WORKS ON DISEASES OF CHILDREN.

1. *On the Wasting Diseases of Infants and Children.* By EUSTACE SMITH, M.D., Lond.; Physician to the East London Children's Hospital, &c. Third Edition. London: J. and A. Churchill. 1878. Pp. 360.

2. *A Treatise on the Diseases of Infancy and Childhood.* By J. LEWIS SMITH, M.D.; Clinical Professor of Diseases of Children in Bellevue Hospital Medical College, &c., &c. Fourth Edition. London: H. K. Lewis. 1879. Pp. 758.

THE almost simultaneous publication in the Old and New Worlds of a third and a fourth edition, respectively, of two works on Diseases of Children, by authors, too, of the same well-known name, is a coincidence indicative at once of the value of the books themselves, as well as of the increasing interest shown of late years in the subject-matter. Sufficient attention, nevertheless, is not yet, we think, generally paid to the study of the Diseases of Children. As a matter of fact, and often of convenience, their treatment is, as a rule, forced upon gentlemen who have devoted themselves to the study and practice of another branch of the profession. Such practitioners, doubtless, may have plenty of experience in seeing children at, and from the time of their birth, but, with few notable exceptions, they have not particularly studied the peculiar features of infantile disease, or won their reputation and professional position by skill in its diagnosis and treatment.

Since reading the first edition of Dr. Eustace Smith's work, on its publication some ten years ago, we have often felt our indebtedness to its author for the information then derived from its perusal; and frequent subsequent references to its pages have strengthened

our original opinion of its merit and usefulness. Limited although its scope judiciously is, it has done much by its practical teaching to inculcate a rational and scientific treatment of the most common and most generally fatal diseases of children; and hence, we doubt not, has to some extent also tended to lessen the prevalence of, and mortality from, those diseases. Perhaps one of the most valuable features in Dr. Eustace Smith's work is the chapter on the Diet of Children in Health and in Disease. This difficult subject is dealt with, as in former editions, in a masterly manner. Minute and yet important, because precise, directions are laid down as to the quantities and the preparation of the various articles of food suitable for use, and excellent *menus* are also furnished suggestive of those alternative changes it is so necessary to make in children's diet, especially in that of those brought up by hand.

In no other publication we know of will such essentially useful, or even similar, information as to children's diet, be found. All through the work the principle of attention to detail—so important an element in the success of a practitioner in all cases, but especially so in the treatment of children—is impressed upon the reader.

Comparing this with the previous editions of the same work, we may notice that the chapters on Chronic Pulmonary Phthisis (before treated of as chronic tuberculosis) present the most alterations—a result, doubtless, of the numerous recent investigations as to the nature and different varieties of this disease. Similarly the more correct term, "Caseation of Glands," now takes the place of "Tuberculisation of Glands" as the title of Chapter X.

Notwithstanding the (unnoticed) condemnation by Dr. T. King Chambers and others of Liebig's Food for Infants, as a "preposterous" compound, Dr. Eustace Smith speaks favourably of that form of it known as "Mellin's Food," when given properly diluted; as Dr. Lewis Smith also does of another form of it. These opinions will probably be shared by many who have practical experience in the feeding of infants. As a mechanical means of aiding in the digestion of the casein of cows' milk, the addition to it of a small quantity of some thickening substance, such as barley water or gelatine, is recommended. Sir W. Jenner's valuable suggestion of feeding the child with milk artificially digested (by means of pepsin, dilute hydrochloric acid, and heat), will often prove of much use in those exceptional cases in which no form of milk appears to agree.

In the valuable chapter on Chronic Diarrhœa, the author gives,

for the first time, a description of that form of it known as lienteric. For its permanent cure, the best remedies, he says, are arsenic and tincture of nux vomica in small doses. This variety of diarrhœa is not to be controlled by ordinary astringents, and is very much increased by aperients, as castor oil. As regards the treatment of ordinary chronic diarrhœa, Dr. Eustace Smith would appear, as his experience increases, to depend more upon judicious arrangement of the child's food and his hygienic surroundings than upon mere drug-giving, which is, as he wisely observes, a question of secondary importance. Consequently he gives fewer prescriptions for astringent mixtures, &c., in this edition, but lays much stress upon the value of a tightly-applied flannel bandage round the patient's hips and waist, and the necessity of keeping his feet warm. Similarly, in the treatment of chronic vomiting, he says:—"The actual drug to be employed is quite a secondary consideration. In bad cases our trust should be placed, not on the Pharmacopœia, but in energetic measures for stopping the fermenting process and assisting the escape of acid from the system. The obstinate vomiting is most surely checked by giving the stomach as much rest as is consistent with supporting nutrition. If the diet have been regulated as described, and if proper precautions have been taken for restoring the action of the skin and ensuring a proper relief from the bowels, the patient will, in all probability, recover, whatever be the drug made use of." He recommends arsenic, however, as by far the most valuable sedative in these cases, after the stomach has been emptied, by an emetic of ipecacuanha wine, of its acid secretions and mucus.

In the chapter on Inherited Syphilis, we find many additions. These include a good description of the "syphilitic dystrophia" of Parrot; syphilitic pneumonia (?); pulmonary and hepatic gummata, &c., and relapse syphilis. As a tonic, when specific treatment in these cases is abandoned, Dr. Eustace Smith recommends iodide of iron, which, he states, is best given, not in the form of the syrup, but by combining iodide of potassium with tartrate of iron in distilled water. "This combination makes a perfectly clear solution, and is much preferred for children on account of the tendency of the Pharmacopœia syrup to set up fermentation and give use to acidity." Syphilitic dactylitis, so well described by the late Dr. John Morgan, of Dublin, is not mentioned.

Such are some of the many new features in this edition of one of the most useful works any practitioner could possess.

Having so recently (October, 1876) expressed our favourable opinion of the third edition of Dr. J. Lewis Smith's Treatise, his second edition having been also reviewed in like terms of commendation three years previously (April, 1873), little remains to be said in praise of this the fourth edition of so valuable and practical a work.

In the first of the three parts into which the contents of the volume are divided, there is a new short chapter on Therapeutics; and, indeed, it is in the therapeutical portion of Dr. Lewis Smith's Treatise—which, as we formerly stated, was an excellent feature of the book—that perhaps the greatest difference exists between this and preceding editions. This difference, perhaps, is most noticeable in the chapter on Pertussis, and throughout the section on diseases of the Cerebro-spinal System, in both of which cases remedies formerly spoken of with some degree of hesitation, are now either omitted altogether from the text, or mentioned only to be tabooed. The same may also be said, as a general rule, of depressant remedies in all cases.

In the treatment of scarlet fever, the author says that "the expectations raised in the minds of many by the employment of salicylic acid in the treatment both of scarlet fever and diphtheria, have been disappointed, and the use of the sulpho-carbolates has not, he thinks, been attended by any better result." As a means of reducing high temperature in the former disease, he prefers the gradual but continued abstraction of heat effected by means of sponging the hands and arms every few minutes with cool water, to the quick and great abstraction caused by immersion of the patient in a cold bath.

We are surprised that neither in the treatment of the throat affection of scarlet fever, nor of diphtheria, does he allude to the use, in any form, of sulphurous acid locally. The application recommended in these cases is a spray of a solution of carbolic acid, gr. iv., and chlorate of potash, gr. xv., in each ounce of a mixture of glycerin and water. All irritating applications in the case of diphtheria are justly condemned—the constitutional treatment of the disease being looked on as of paramount importance. This, it will be observed, is opposed to the views of Oertel, the writer of the able article on diphtheria in Ziemssen's "Cyclopædia," who places local treatment first. By this article Dr. Smith considers an immense amount of harm has been done. The brush and inhalations were made the potent instruments of cure, and constitutional remedies were relegated to the second place.

Dr. Smith is an advocate of the liberal use of alcohol in diphtheria, and says that to be instrumental in saving life in malignant cases it should be given boldly from the start. But he does not consider it a trustworthy antidote to, or specific for, the disease, as Dr. E. N. Chapman does, in a work he was good enough to send us lately.[a] Dr. Smith believes in the non-identity of croup and diphtheria. His chapter on the latter disease contains much that is new and interesting.

In America, as was lately shown in this Journal (May, 1879), there is a famous supply of vaccine lymph from the heifer, and it is important to know that Dr. Lewis Smith still prefers animal vaccination in ordinary cases, as he has found it so very reliable.

Although there may be in this edition some omissions, and a few statements on some subjects not in accordance with recent knowledge, the practitioner will still find Dr. Lewis Smith's Treatise a reliable guide in the diagnosis and treatment of children's diseases.

A Manual of the Operations of Surgery. By Joseph Bell, F.R.C.S., Edin. Fourth Edition. Edinburgh: Maclachlan & Stewart.

This is the fourth edition of a work which has enjoyed much popularity. It is intended for the use of senior students, house-surgeons, and junior practitioners. When it first appeared it was accepted as a most excellent production, and a credit to the surgeon who wrote it. Indeed in these countries it has held a first place, and has, we think, deterred anyone else from making a similar venture. We fear, however, that Mr. Bell will not be long without competitors. We have examined his latest edition with some care, and we are surprised to find that so little change has been made in the book when compared with the second edition published ten years ago. Surgery has certainly not been sleeping during that time, but we find little indication of progress in Mr. Bell's book. The same familiar woodcuts, with a solitary unimportant addition, meet the eye, and the letterpress is increased from 281 to 294 pages. We have looked at haphazard into one or two places to test the level to which the information has been brought. The

[a] The Antagonism of Alcohol and Diphtheria. By E. N. Chapman, A.M., M.D. Brooklyn. 1878. Pp. 98.

page and a quarter devoted to fissure of the hard palate remain the same as they were ten years ago. There is no reference to Fergusson's operation or to other improvements by different surgeons. In thigh amputations there is no allusion to Stokes' method. Such an important procedure as an operation for genu valgum finds no place in the book; and Adams' operation for ankylosis at the hip-joint is dismissed in a line. We have not cared to pursue our comparison further; but we may ask why Mr. Bell has sent out such a volume as in some sense a representative manual of operative surgery? It is no excuse to say, as he does, that he has sought to maintain the small size of the work. That might have been done if ordinary pains had been taken to weed out a lot of useless matter, and to substitute really good instruction. We confess to being astonished that a surgeon of Mr. Bell's known position and admirable attainments should have permitted such an edition to be published. As it stood ten years ago the manual was excellent; as it stands now it is very defective; and our advice to Mr. Bell is to issue a fifth edition as soon as possible, with some reference to the advance of surgery.

Fistula, Hæmorrhoids, &c. By WILLIAM ALLINGHAM, F.R.C.S. Third Edition. London: J. & A. Churchill. 8vo. Pp. 325.

MR. ALLINGHAM'S book appears in a third edition, and with the recommendation that it has been twice issued in America, and has been translated into several foreign tongues. The work is issued as a practical guide to the treatment of diseases of the rectum, and the views of the author are conveyed in a forcible and instructive way. We are bound to say, however, that the style is oftentimes rough, and sometimes slovenly, and that the kindly pen of an editor is much needed.

The terror with which most patients regard the use of the knife in the treatment of fistula is one of the difficulties which surgeons have tried to deal with. The author records that in the last few years he has, on many occasions, treated blind external fistula successfully without incision. The external opening must be enlarged with a piece of sea-tangle or a small sponge-tent.

"When the opening is large enough, I clean out the sinus well, and then rapidly run down to the end of it a small piece of wool saturated in strong carbolic acid, with ten per cent. of water. I mount the wool upon

a stiff piece of wire set in a handle, and just roughened at the free end. . . . I then put in a drainage-tube just large enough to fill the sinus, and keep it in. The interior of the sinus is by the acid induced to granulate; and if you are successful, you will find almost day by day that a shorter drainage-tube will be required until the whole sinus is filled up."

The elastic ligature was advocated by Dittel as one of the best means of curing fistula without using the knife, and Mr. Allingham has found much advantage in it. Generally we think the objection to its use has been the great pain caused by it; but the author assures us "that those who find a difficulty in getting a ligature to cut through quickly and painlessly, are ignorant of the proper method of applying it." He says—"I have for a long while now only used solid India-rubber, so strong that I cannot break it; and I put it on as tightly as I can, and fasten it by means of a small pewter clip pressed together by strong forceps." The personal experience of eight medical men is that there was no pain, and even very little discomfort from the ligature, so that they were able to go about and see their patients.

The very vexed question of the propriety of operating for phthisical patients is the subject of a good practical chapter. Mr. Allingham recommends that the operation should never be done when the cough is constant, and that genial weather should be selected for its performance..

The various methods of dealing with hæmorrhoids are noticed in detail, and their merits discussed. It is interesting to have the experience of a specialist upon the use of the clamp and cautery, as advocated by Mr. H. Smith, and first introduced by Mr. Cusack, of Dublin. Mr. Allingham says the operation has little to recommend it, as it is "quite six times as fatal as the ligature properly and dexterously applied." In 195 cases operated on by the author with clamp and cautery, two died; and Mr. Smith acknowledges four deaths in 530; but Mr. Allingham has used the ligature, combined with incision, in 1,100 cases without a single death from any cause whatever. The comparison of results is here entirely in favour of the ligature, and although it may not be as brilliant a proceeding as the use of clamp and cautery, it has, at least, the advantage of being safe.

The remaining chapters are devoted to fissure, ulcers, pruritus, stricture, and prolapse—all dealt with in a very practical way.

WORKS ON DISEASES OF THE SKIN.

1. *On Diet and Hygiene in Diseases of the Skin.* By L. DUNCAN BULKLEY, M.D. 1878.
2. *On the Use of the Solid Rubber Bandage in the Treatment of Eczema and Ulcers of the Leg.* By L. DUNCAN BULKLEY, M.D. 1878.

THE first of these pamphlets contains some sensible remarks on a branch of therapeutics which has not received sufficient attention in works on dermatology. We do not remember having heard before what Dr. Bulkley says is well known, that buck-wheat brings out an acniform pustular eruption in some persons.

In the second pamphlet Dr. Bulkley relates a number of cases which confirm, in a striking way, the results claimed by Dr. Henry Martin for his method of treatment.[a] There is now sufficient experience accumulated to show that the profession owes to Dr. Martin a debt of thanks for the introduction of a plan which promises to effect almost a revolution in the management of a large and distressing class of cases so often rebellious heretofore to treatment.

3. *Die Hautkrankheiten für Aertze und Studirende.* Von DR. GUSTAV BEHREND. Braunschweig: F. Wreden. 1879. Pp. 569.

DR. BEHREND appears to have written this book at the instigation of his publisher, and the result of his task is a careful compilation chiefly based upon the teaching of Hebra's classical work. Indeed, almost the only charge we feel inclined to bring against the author is that he reflects too exclusively German teaching, and ignores some of the best English and American work. We owe much to the German school, but dermatology has not been at a standstill elsewhere, and no treatise on cutaneous subjects can justly afford to pass over in silence the many and important contributions which English and American writers have made to dermatology. One of the best features in the volume under notice is the careful and succinct account given of the pathology and morbid anatomy of the different diseases, and we may refer in especial to the sections that treat of molluscum contagiosum, lupus, and carcinoma. A fair and concise description is furnished of the anatomy and physiology

[a] For an account of this method of treatment, see the number of this Journal for July, 1879, page 95.

of the skin, followed by a useful sketch of the general pharmaco-therapeutics of the skin. For those who read German we can cordially recommend Dr. Behrend's book as an excellent and well-written epitome, which will stand in good stead not only to practitioners and advanced students, but also to those who specially cultivate dermatology.

4. *Lectures on Clinical Surgery.* By Jonathan Hutchinson, F.R.C.S. Vol. I., Part II. (On certain Rare Diseases of the Skin). London: J. & A. Churchill. 1879.

Some months ago we had occasion to commend Part I. of this volume, and we need not say more in praise of this second and concluding part than that it excels the first in interest. Mr. Hutchinson knows how to make much out of common and familiar subjects—witness Lecture XVIII. on Varicella, and almost every page testifies to the fruitful results of studying cutaneous affections on the basis of their natural clinical and pathological affinities. His descriptions of disease are singularly graphic and life-like, and we have often felt this when some case in our past experience that puzzled us was recalled to our mind, and its nature elucidated by some suggestive remark of Mr. Hutchinson. No physician or surgeon can claim to be well read who is ignorant of Mr. Hutchinson's writings.

5. *On the Permanent Removal of Hair by Electrolysis.* By G. H. Fox, M.D. New York. 1879.

Dr. Fox, taking a hint from the ophthalmologists, proposes to destroy obnoxious hairs by introducing a fine flexible steel needle, or, if the follicles be large, a platinum wire into the bottom of the follicle, the hair having been previously extracted. The needle is connected with the negative pole of 5–10 cells of a battery, and the current is allowed to pass for a sufficient time to destroy the papilla. This method must necessarily cause considerable pain, and until the author supplies more definite proof than he has done we cannot feel very sanguine about the success of his plan.

The Student's Guide to Surgical Diagnosis. By Christopher Heath, F.R.C.S. London: J. & A. Churchill.

Mr. Heath is already known by several contributions of a very high order to surgical literature. As a clinical teacher he has become

acquainted with the many weaknesses in students' knowledge, and he has sought in the "Minor Surgery and Bandaging" and in the present publication to help pupils through many of their difficulties. This "Guide" will be an excellent aid. It groups injuries and affections of parts anatomically, and a student can see in a page or two what some abnormal condition "might be," and be helped to recognise it. We have read the little book with pleasure, and we are sure that the student will find it a most useful addition to his library.

RECENT WORKS ON THERAPEUTICS.

1. *First Lines of Therapeutics.* By Alex. Harvey, M.D. London: H. K. Lewis. 1879. Pp. 278.

The text of this volume is the statement iterated over and over again, that the foundation of rational therapeutics consists in rightly apprehending two principles—viz., the modes of healing and recovery, and the modes and processes of dying. We are constrained to say that the work does not repay perusal; it is wordy and commonplace, and the arguments are feeble. Although much of what the author affirms may be and doubtless is quite true, it was scarcely necessary to write a book to announce his opinions to the world. The impression left by reading it is that Dr. Harvey has endeavoured to grapple with a subject far beyond his abilities or his attainments, and has naturally produced a sorry result. For example, speaking of our knowledge of the actions of drugs (p. 163)—"The great sympathetic and its ganglia, the pneumogastric nerve and its many branches, together with the spinal cord and its system of reflex nerves, its nerve-ends, and the vasomotor system, the proper functions of which are in many respects obscure, have more or less to bear the chief burden in solution of the actions of drugs. The very ground on which many of our explanations rest is itself insecure." We need not multiply quotations of such nonsense as this.

2. *A Handbook of Therapeutics.* By Sydney Ringer, M.D. Seventh Edition. Lewis. 1879.

A demand for seven editions within ten years proves that the author has succeeded in supplying a widely-felt want in medical literature, and renders any criticism of his labours needless or

superfluous. The book is scarcely increased in size from the last edition, notwithstanding the additions rendered necessary by new observations. Dr. Ringer has thought it well to depart somewhat from his original design by inserting chapters on the tongue, pulse, skin, and temperature, with the indications they afford in treatment. The careful analytical index to diseases which was prepared for the last edition by Dr. Maxwell, is a valuable aid for reference; and the utility of the book would be further increased by the substitution of some plan of classification of subjects for the arbitrary and seemingly random sequence of articles as at present.

3. *Aids to Therapeutics and Materia Medica.* Part I. By C. E. Armand Semple, M.B. London: Baillière, Tindall, & Cox. 1879.

One of a mischievous class of books, for which there unfortunately appears to be a growing demand among medical students. Its proper title would be—"Hindrances to Therapeutics and Materia Medica."

4. *Histoire Thérapeutique du Bromure de Potassium.* Par le Dr. G. Huette. 1878. Pp. 193.

A compilation, and by no means an exhaustive one, from the principal papers and memoirs which have appeared in relation to bromide of potassium since its introduction into practice thirty years ago. M. Huette reminds us that, in 1850, his father was the first to make known the physiological properties of bromide of potassium, and to open up the therapeutic applications of this salt.

On Regressive Paralysis (Infantile Paralysis; Spinal Paralysis of Adults). By W. H. Barlow, M.D., Manchester. 1878. Pp. 88.

Dr. Barlow, in virtue of his opportunities as Physician to the General Hospital for Sick Children in Manchester, has paid some attention to the spinal paralysis of childhood and of adult life, the identity of which affections is now generally recognised. He proposes to include them both under the designation "regressive paralysis," a term which, in his opinion, denotes a constant and pathognomonic characteristic of this disease. The paper is illustrated with a plate exhibiting the flaccid and atrophied aspect of the paralysed limbs, and also some of the pathological alterations in

the nerve centres. It gives a fair summary concerning a malady unfortunately too common, but does not add anything to our knowledge respecting it.

A Guide to the Practical Examination of Urine. By J. Tyson, M.D. Second Edition. Philadelphia. 1878. Pp. 172.

We have experienced both pleasure and profit from the perusal of this book. It is agreeably written, contains much practical information, and is, we believe, a reliable and satisfactory guide to the clinical examination of urine, going more fully into the subject than Dr. Wickham Legg's excellent little work. It deserves, and probably will quickly reach, a third edition, and with that expectation we desire to call the attention of the author to some minor blemishes which seem to have escaped his notice. A considerable number of misprints mar the text, and indicate a careless revision of the proofs. Among the few chemical formulæ we observe that the formula for uric acid stands in the old notation; and at page 69 we are told that the bubbles which, in the hæmin test, sometimes appear after the addition of acetic acid, even before heat has been applied, "are carbonic acid which has developed out of the earthy *phosphates*."(!) Some of the engravings—*e.g.*, those of tube-casts—are too roughly executed to be of much service for reference; but, allowing these few points, we can recommend Dr. Tyson's book as one that amply supplies the clinical needs of the physician, and leaves little unnoticed that is of practical importance.

HYDROFLUORIC ACID INHALATIONS IN DIPHTHERIA.

M. Henri Bergeron has read a paper before the Société de Médecine on the above method of treating diphtheria. He has tried it in 24 cases, out of which 17 were severe, and he has had 5 deaths, 4 of these being infants. The dose he has found suitable is 1 gramme for each cubic metre which the apartment contains, evaporated in the space of three hours. He claims (1) that the inhalations thus given have never produced injurious results. (2) All who had been submitted to this treatment for 48 hours were cured. (3) The false membranes do not persist beyond the fifth day. (4) In no case has he observed paralysis supervene in the soft palate or elsewhere. (5) No case of contagion has occurred amongst the attendants or the household.—*L'Union Médicale.*

S. W.

PART III.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

CLINICAL RECORDS.

MEATH HOSPITAL, DUBLIN.—*Thoracic Aneurism.* Being the substance of a Clinical Lecture delivered by ARTHUR WYNNE FOOT, M.D., F.K.Q.C.P., Senior Physician to the Hospital.

THERE are at present in No. 15 Ward two cases of thoracic aneurism which call for some observations, which are better made in the Lecture Theatre than by the bed-side. The subjects of the disease are a soldier and a sailor respectively.

The soldier is thirty-seven years of age, and has had nineteen years' service in the British army. Fourteen years ago he contracted syphilis in Hong Kong. When in India, in the last eight years, he was three times on the sick list for "bronchitis," was at last invalided home, and admitted to Netley Hospital 26th May, 1879; he was discharged thence and from the service 10th July, 1879. After his discharge from Netley he came to Dublin, and, finding himself getting worse, applied here 9th Sept., 1879. His case was diagnosed in the hall by Mr. Henn and Mr. Armstrong, and he was at once admitted, when they drew my attention to him. He then presented as physical signs a strong pulsation and double sounds to the right of the sternum, and as symptoms pain in the right chest, dyspnœa, and cough. The first in order of occurrence of these symptoms was the pain which commenced in the first quarter of the present year, and prevented him from sleeping in a hammock on his homeward voyage. He has recently become subject to paroxysmal attacks of dyspnœa different from the constant shortness of breath he experiences. He was unable to lie down when admitted, and got what sleep he could in a sitting position, with his hands clasped round his knees and his head bent forwards. He was put on iodide of potassium in 20-gr. doses ter die; these were reduced to 10-gr. doses when symptoms of iodism appeared; local leechings relieved the pain in the right breast; nitrite of amyl internally in 2-$\mathfrak{m}$. doses assuaged the paroxysmal dyspnœa, and a mixture with morphia abated his cough. He is at present able to

lie down and sleep, and the pain and spasmodic dyspnœa have ceased for some days.

The sailor is forty-one years of age, a first-class pilot, and has been at sea for at least twenty-five years. He was admitted last Saturday, 20th September, 1879. He applied for advice about a "lump" which he had noticed for about six weeks on the right front of the chest just above the nipple. There is a tense, firm, hemispherical prominence in that situation, about the size of half an orange; it gives no impulse to the hand or eye, but over it the heart sounds are both distinctly heard. Pain has not been severe at any time, and he has neither cough nor dyspnœa on exertion. He was put at once on iodide of potassium, grs. 10 t. d., which was next day doubled, but on 24th reduced again to grs. 10 for a dose t. d., because of symptoms of iodism.

The first case presents the *local and proper signs* of aneurism—the impulse and the sounds. There are no signs by which the pulsations of an aneurism within the chest can be distinguished from those of the heart, and the sounds coming from the aneurism are usually precisely similar to those issuing from the heart, so that considering the similarity of the pulsations and of the sounds of the aneurism to those of the heart, we must allow (with Dr. Stokes) the diagnosis of an intra-thoracic aneurism to depend in many cases on the discerning of two centres of pulsation—of two hearts, as it were, within the chest.

So similar are the sounds of thoracic aneurism to those of the heart, says Dr. Stokes, that were a good observer blindfolded, and the stethoscope placed for him over the seat of disease, he would find it difficult, if not impossible, to distinguish them from the ordinary sounds of an excited heart.

There is no murmur in either of these cases with the aneurismal sounds, and this is what is usually observed in aneurism of the thoracic aorta. So commonly wanting is murmur in thoracic aneurism that Dr. Stokes considers its occurrence as exceptional.

As a general rule the sounds of an aneurism are more and more similar to those of the heart according as the seat of disease approaches the origin of the aorta. The simplest expression of the physical diagnosis of thoracic aneurism is the discovery of two centres of pulsation within the thorax, as indicated by a second area of impulse and a second focus of sounds differing from that of the heart only in position. That the force of the impulse of an aneurismal tumour is very variable is illustrated by these two cases. In the soldier the impulse can be both seen and felt, in the sailor it is not perceptible to eye or hand. The force of the impulse depends upon three things which can modify it or abolish it altogether—the force with which the left ventricle contracts, the size of the orifice between the sac and the artery, and the quantity of fibrin which the sac contains. The first two affect the quantity of blood the

aneurism receives with each systole, the third muffles the shock of the expanding sac. In reflecting on the absence of pulsation in the sailor's case and its probable causes, it is well to bear in mind Dr. Stokes' statement, that the localised pulsations (and also the dulness on percussion) may disappear from their original situations without any cure of the aneurism, but solely from the tumour pointing in another direction. On auscultation over either of these aneurisms you hear just what you hear over the thoracic aorta itself or over the heart—a systolic and a diastolic sound. The systolic sound is produced by the forcible expansion of the walls of the sac, as well as of the aorta near it; the diastolic sound is propagated from the aortic valves, and is sometimes even heard louder over the sac than over the valves themselves—a fact which seems to be due to "resonance within the cavity of the sac itself and better conduction to the ear of the observer" (Quincke). This phenomenon is very evident in the soldier's case.

Some general conclusions about Thoracic Aneurism.—The thoracic aorta is affected in one-third of all cases—in 175 out of 551 cases of aneurism (Crisp); more frequent in men than women; more commonly among the poorer classes, especially those whose occupations are laborious, such as smiths, porters, &c.; a very prevalent disease among soldiers; in 1866 the deaths from aortic aneurism in the English army were eleven times more frequent than among the civil population, according to the statistics of Inspector-General Lawson.[a] The causes which lead to this are said to be strenuous corporeal exertion, inappropriate clothing, and accoutrements which compress the arteries of the neck and arms. The *modus operandi* of gymnastic or other violent exertions is that a general contraction of the muscles, by compressing many of the capillaries, must throw an increased strain upon the aorta. Aneurism seems to occur with extreme frequency in Great Britain as compared with other countries—Germany, France, Italy. It has been suspected that this is to be explained by a fondness for gymnastic exercises, a more copious use of alcoholic liquids, and a greater frequency of endarteritis. Sailors with an equal liability to great physical effort, and affected in about equal proportion with the taint of syphilis, although more subject to aneurism than civilians, are less so than soldiers—their greater immunity in this respect appearing due mainly to their looser dress and more gradual training.

The occurrence of impulse to the right of the sternum is evidence that the aneurism is touching the thoracic wall; it is perceptible upon *inspection*, and becomes still more evident upon palpation. In order to detect the pulsation of a thoracic aneurism, it is sometimes necessary to make pressure with the flat of the hand on the anterior part of the chest, while the other hand is placed between the shoulders. It is frequently

[a] Army Medical Report, 1866.

accompanied by a peculiar whirring sensation—at times perceptible in the soldier's case—the purring thrill, "*fremissement cataire.*" The point at which pulsation appears in aneurism of the ascending aorta is usually on the right border of the sternum at the second intercostal space. In aneurism of the arch it is at the manubrium sterni; in the descending aorta it may be perceived upon the left side of the lower thoracic vertebræ.

Aneurisms of the aorta are most frequently situated upon its ascending portion before the departure of the innominata, and most commonly spring from its right or convex side. When they originate beyond the pericardium they are generally very large, and may grow to the size of a man's head. Such usually push outwards behind the right half of the sternum, and become visible in the region of the upper ribs and costal cartilages of the right side. Such aneurisms rarely ascend higher than the clavicle or descend below the fourth costal cartilage.

The symptoms or subjective indications of thoracic aneurism have been illustrated by these cases. These vary in their nature and intensity with the seat of the tumour and the direction in which it is growing, and are due more or less to compression upon parts adjacent to the aneurism, and so may be called *the pressure effects* of aneurism. These symptoms may be ranked as follows, nearly in order of frequency—as pain, dyspnœa, and cough.

In the soldier's case the pain was of a stabbing character, corresponding in position with the seat of the tumour, and referred to the right mammary region, but shooting backwards thence to the right shoulder blade and interscapular region. Dr. Stokes held that pain was the only symptom proper or essential to aneurism of the thoracic aorta, and that this pain is of uncertain occurrence, and varies in its seat, nature, and amount; so the necessity of relying for the diagnosis on the physical signs so often mentioned—of a second centre of pulsation and sounds similar to the heart, but differing in locality—becomes the more urgent. If you rely on *symptoms* for the diagnosis they may leave you in the lurch by their absence, for aneurism of the thoracic aorta frequently does *not* present any of the special symptoms just mentioned—pain, dyspnœa, cough—and may be then one of the most undiscoverable of diseases.

Aneurismal pains are not always connected with absorption or perforation of adjacent parts, such as the parietes of the chest—processes which often occur, as it were, in secrecy and silence. The pain may be connected with irritation of the pleura, as is shown by dissection, and by the existence, according to an observation of Dr. Stokes, of a pleuritic friction sound confined to the region of the aneurism.

The dyspnœa which the soldier suffered from is one of the most frequent *symptoms* of thoracic aneurism. It is partly due to the diminution of the thoracic capacity by the tumour. In the case in question there is almost certainly physical compression of the upper lobe of the

right lung, or the dyspnœa may be due to the pressure of the aneurism upon a large bronchial tube or on the trachea itself. In many cases there is a paroxysmal dyspnœa quite disproportionate to alterations discoverable in the lungs, and this seems to be truly neurotic in character, and dependent upon a lesion of the pulmonary branches of the vagus nerve by the aneurism. Dyspnœa, however caused, is one of the most common and distressing symptoms of aneurism.

Contrasting these two cases as to the relative amount of suffering, the sailor seems to be far better off in his freedom from pain, cough, and dyspnœa, with their attendant exhaustion and loss of sleep. Bearing on this consideration is the interesting fact, deduced by Dr. Sibson from the analysis of nearly 900 cases of aneurism, that those cases which end by rupture of the sac are attended during life with less formidable symptoms than those which kill without such rupture, and sometimes with no symptoms at all. The patient may seem and may believe himself to be in perfect health. The reason of this is that rupture is often prevented by some opposing part, upon which the enlarging tumour makes distressful pressure.

The question of the treatment of thoracic aneurism is concerned with three sets of conditions—the relief of symptoms, the management of a tumour threatening to rupture externally, and the cure of the aneurism. Those who entertain no hopes of accomplishing the latter result must address themselves to either of the other two considerations.

Pain is so constant a symptom of thoracic aneurism that Dr. Stokes held it was the only symptom proper and essential to aneurism of this vessel, and it is usually that for which relief is earliest and most urgently sought. Dr. Stokes has laid down the rule that in aortic aneurism, when the action of the heart is undisturbed, and there is no physical sign of disease in the valves or cavities of that organ, any medical interference beyond what is necessary for the relief of pain is unjustifiable.

In the soldier's case you might have observed the great and immediate relief of pain which followed the application of two leeches over the sac on different occasions. On this subject Dr. Stokes observes local bleeding is commonly productive of the happiest effects, and it is singular what an amount of relief follows the application of but a few leeches over the seat of disease. These may be repeated from time to time, and in this way we can not only prolong life but render it comfortable. The use of three or four leeches, whenever the local distress becomes troublesome, is often followed by a period of singular relief. In several cases (he continues) we have pursued this treatment for months, and in a few even for years, and have thus enabled aneurismal patients not only to enjoy life, but to follow their ordinary avocations in the intervals between each access of distress, whether it was from the stridor, the pain, and cough, or even the neuralgic pains which shoot along the neck and affect the

back and sides of the head. Dr. Stokes thought the relief given by leeching seemed to show that local inflammatory action of some kind was, as Hasse teaches, in many cases connected with the extension of the tumour. Where these means are inadequate for the relief of pain, recourse may be had to hypodermic injections of morphia.

The internal treatment which has been employed in these cases is that of iodide of potassium in full doses, which has been particularly advocated by Dr. Balfour, of Edinburgh.

Dr. Balfour believes that no treatment for aneurism, and especially for internal aneurism, holds out anything like an equal prospect of relief, if not of cure, with that by the iodide of potassium. In the *Edin. Med. Jour.*, Vol. XIV., he cites 15 cases in which this treatment (in all save one hopeless case) caused marked relief of pain; in 12 undoubted diminution of the sac; in some an apparently perfect cure. The dose varied from 5 to 30 grains three times a day. In one case 10 grains ter die produced violent salivation, which ceased on reduction of the dose to 5 grains; in another 20 grains ter die seemed to produce violent diarrhœa, which also ceased on the reduction of the dose to 5 grains. Relief of pain is one of the earliest symptoms of amendment under this treatment, and is not produced until an efficient dose has been reached. Coryza he considers to be more referable to idiosyncracy than to the largeness of the doses and its poisonous action. Dr. Balfour has given 90 grains (sometimes more) daily for months. The treatment may require months or years, though some have found less time sufficient; the recumbent position is an important adjuvant, although it is not necessary, and also a moderate amount of food. Dr. B. thinks that the effect of iodide of potassium is to produce diminution of the cardiac force and of the blood pressure, and secondarily diminution of the size of the sac and thickening of its walls by some peculiar action on the fibrous tissue, by which the contraction of the sac is aided, and its walls are strengthened and condensed. He does not think that it increases the coagulability of the blood. No other salt of potash has the same effect. Iodide of sodium has been tried, but has no special advantage, and is not at all less apt to produce coryza. The most favourable cases for its employment are sacculated aneurisms, and in young persons and from traumatic causes. Age, slow-growing aneurisms, and spontaneous aneurism are unfavourable conditions, as indicative of arterial disease of an extensive kind. Furthermore, Dr. Balfour thinks iodide of potassium acts prophylactically and remedially in the aneurismal diathesis.

The diet and general treatment of a patient affected with aneurism is a matter of no small importance. Bodily exertion and all excitement, whether produced by psychical or alcoholic agency—in short, whatever increases the cardiac action and the arterial blood pressure, are to be avoided as much as possible, and the greater the development of the

aneurism the more strictly is this to be insisted upon. Exertion of muscles in the neighbourhood of an aneurism is particularly to be avoided. The *diet* should be moderately nutritious, and suited to the strength of the patient; if general emaciation is commencing, the chief object of treatment must be to delay it by the administration of nutritious food. Dr. Stokes observes that the necessity for avoiding a low system of diet will increase in proportion to the duration of the disease and the weakness of the heart. The same author states that it has often happened to him to be able to remove again and again in the same patient the symptoms of stridor, dysphagia, and cough, simply by placing him on a nutritious and even stimulating diet. He relates a remarkable circumstance which occurred in the case of a large aneurism with a weak heart, which illustrates the effect of a generous diet in aneurismal disease. The patient, after a six weeks' course of very low living, became almost desperate from the intensity of the pains, the loss of sleep, and the violence of the throbbings. He was passing through the city when the thought entered his mind that he would have one good dinner before he died. He entered a tavern, and ordered a sumptuous repast of turtle-soup, fish, roast meat, and wild fowl. Of all these he partook ravenously. He drank a bottle of Madeira and two glasses of brandy-punch; and he declared to Dr. Stokes that when he rose from the table he felt perfectly relieved from all his sufferings. He slept well that night, and continued so free from distress of any kind for many days that he thought himself cured of his terrible disease. An opposite opinion was acted upon by many of the earlier physicians, who prescribed repeated blood-lettings at short intervals, while a starvation diet was insisted on. This was the method of cure recommended by Valsalva and Albertini, and persisted in until the patient was reduced to the utmost extremity of weakness. The objection to all attempts at cure by a restricted diet is that the irritability of the heart is thereby much increased, and the nutrition of the arterial walls impaired, so that as much injury may be produced in this way as quite to counterbalance any good effected by the diminution of the blood-pressure; moreover, by a restricted diet the blood becomes more watery and less capable of coagulating. Evidence of a rapid softening-down of the laminated coagula which had almost blocked an aneurism may sometimes be found *post mortem* in those who, subsequently to careful treatment, have again been subjected to the debilitating circumstances of a life of poverty.—25*th Sept.*, 1879.

Case of Enteric Fever, of nine weeks' duration, complicated with—(1) *Acute Cerebral Symptoms*, (2) *Phlegmasia Dolens of Left Leg, and* (3) *Rigors, in which a very large dose of Camphor, given by mistake, was followed almost immediately by good results.* Reported by GEORGE B. WHITE, L.R.C.S.I.

CISSIE M., aged twenty-one years, was, up to the time of this attack, quite strong and healthy, having only been sick twice in her whole life-time, and then only for very few days. There was an excellent family history. On Sunday, April 6th, 1879, she woke with a throbbing head-ache and feeling of a general *malaise;* still she did not stay in bed, as she said "she would try and shake it off," so she remained going about the house till the 9th, when the constant pain and violent throbbing in her head became so intolerable that she was obliged to take to her bed.

April 13th.—Dr. Wharton was called to see her, as she was still suffering from the pain, without any mitigation. She was now ordered cold applications, constantly applied to her forehead.

16th.—Febrile symptoms now running high, Dr. J. W. Moore was sent for, and saw the patient in consultation with Dr. Wharton. Although no fixed diagnosis could yet be made, it was pretty evident that the patient was suffering from typhoid fever. Nevertheless there was constipation instead of diarrhœa, the temperature remained uniformly high for three days (104°), and no rose spots had appeared up to this time. However, there was no vomiting, which served to distinguish the cerebral symptoms of continued fever from disease of the brain itself, with which the fever might have been most easily confounded. Towards April 26th the typhoid character of the fever began to show itself, and it became a matter of certainty what it was. It is noteworthy that the fastigium of the fever in the twenty-four hours was generally reached in the morning, shortly before noon, instead of the evening, when it is said usually to occur in these cases. The highest temperature during the case was 105·4°, on the morning of April 26th.

May 3rd.—The patient got an attack of phlegmasia dolens, the cause of which was not made out satisfactorily. Dr. Hudson was called in consultation, and confirmed the diagnosis, but the patient was much excited after the examination, and appeared very weak. About eleven o'clock, p.m., delirium of a fierce character (*delirium ferox*), set in, and lasted all night. The patient also had six motions from the bowels during the night; her pulse became very irregular and rapid. Ordered: enema opii (which was only retained fifteen minutes) for the diarrhœa, and a moderate dose of tr. digitalis three times a day, which proved of great service in reining in and equalising the cardiac action. The left leg was encased in cotton wool, covered with oiled silk, and kept in an elevated position, to favour the venous circulation. A little wine was also allowed; port at first was tried, but, as it did not agree with the patient, claret was substituted.

Beef-tea and milk were freely given to support the strength; the skin was sponged every morning and evening with vinegar and warm water, and the patient was moved from the hot side of the bed over to the cool one, the bed being wide. This gave her great relief.

4th.—The patient continued to get worse, now commenced "plucking at the bed-clothes," with low muttering, subsultus tendinum, and coma-vigil, but still did not refuse milk and beef-tea.

5th.—The patient still continued perfectly sleepless, and had not now slept for three days and three nights. Being very much alarmed about her, I went to Dr. Moore, and he ordered her the following prescription:—

℞.—Liquor opii sedativ., ʒ j.
Tinct. digitalis, ʒ j.
Spt. æther. nitrosi, ʒ ij.
Aquæ camphoræ, ad ʒ vj. M.

Ft. mist. Signa: One sixth part at once; a tablespoonful every second hour afterwards until the patient sleeps.

This I submitted to Dr. Wharton, who approved it, and I had it made up. One-sixth part of the medicine was given at once, the directions being—"ʒ j. at once; ʒ ss. every second hour until sleep was induced." The medicine was no sooner taken than I was called up in great haste to see her on account of the great change in her condition. I found her in a dreadful state—frothing at the mouth; convulsions; lividity of lips; respirations 50 per minute; body cold and clammy—in a word, the patient was apparently moribund. I examined the medicine immediately, and found it had been made up with spirit of camphor instead of camphor water. I took it to Drs. Wharton and Moore, who said I was right, and they kindly came to see her immediately, and ordered her—Battley, ♏ xxv.; syrup of poppies, ʒ j.; tr. of digitalis, ♏ x.; cinnamon water, ʒ ij. They also advised that her mouth and throat should be kept lubricated with cream. At the same time she was to be made swallow as much milk as possible (for it was found that she had swallowed gr. 40 camphor + ʒ j. of rectified spirit). At the same time they gave little or no hope of her recovery. About two hours after getting the camphor and opiate, she fell into a sound sleep, which lasted four hours, and, on the morning of the 6th May, she awoke very much better—much to everyone's surprise and delight, for never had anyone been "snatched out of the jaws of death" in a more hairbreadth manner than she. It was thought that the patient was so weak that an emetic would not be suitable for her.

How much of this result was due to the camphor is a question I do not presume to answer, but that it did contribute to it seems to me to be undoubted. The quantity taken was certainly large enough to have an effect, being gr. 40 or upwards. This may probably be the means of

setting on foot some carefully-conducted experiments as to the safety and utility of using larger doses of camphor in the treatment of fevers than those hitherto used—the fact being that on the morning of the day after she got this very large dose, the patient woke much refreshed, all the bad symptoms having gone, and being succeeded by perfect tranquility—to use her own words, the "burning heat," of which she complained after the dose of camphor, was much relieved. I would say there is certainly some lesson taught by this, which I hope will be soon learned, never to be forgotten, though not in a similar manner. The progress of the rest of the case may be gathered from the following notes:—

7th.—There being some obstinate constipation, she was ordered a simple enema; one motion.

8th.—Leg paining very much (stuped); Battley, ♏ xv.; slept.

9th.—Enema simplex.

12th.—Patient got very sick, and had three rigors; temperature rose next day to 104°, after which it fell steadily.

16th.—Temperature, 99°; pulse, 88; digitalis stopped; coughing all night.

17th.—Leg paining; temperature rising in consequence.

18th.—Leg easier; cough gone.

20th.—Got an attack of erythema (right leg).

21st.—Right leg hyperæsthetic; painted with tr. of aconite; allowed saffron bun toasted.

22nd.—Both legs much better; got part of an egg.

23rd.—Able to lift right leg a little.

27th.—No motion from bowels for six days; as they resisted castor oil, turpentine enema, soap enema, &c., she was ordered to have an enema of soap-suds and salt, which acted.

30th.—Allowed bit of chicken.

31st.—Had a fainting fit in bed.

June 1st.—Allowed up first time for two hours.

Convalescence subsequently went on without interruption.

AN OINTMENT FOR CHRONIC PAINS.

The following is recommended for the pains of chronic or subacute gout, rheumatism, neuralgia, &c., by Dr. Lenoble, of Esternay:—℞. Pulv. Gambogiæ, Myrrhæ, Canellæ, Sodæ salicylat: āā 10 grammes, reduced to the proper consistency with spirits of turpentine. The affected part should be well rubbed with this three times a day, and then enveloped in cotton or wool.—*Rev. Méd.*, June 14, and *N. Y. Med. Record*, Aug. 30, 1879.

COMMENTARIES ON DISEASES OF THE KIDNEYS.[a]

Part III.

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[*Continued from page 465, Vol. LXVII.*].

The Second Type of Bright's Disease.—Synonyms: the contracted, granular, small red kidney—the gouty or saturnine kidney—interstitial nephritis—renal cirrhosis—renal sclerosis—granular atrophy of the kidney. Theory of the unity (Continental), or of the multiplicity (English) of Bright's diseases. Charcot's epitome of the history and progress of the granular kidney. Insidious nature of the disease—proofs—latency of its earliest stages. Polyuria an initial symptom—nocturnal rather than diurnal—mistaken sometimes for diabetes. Quantity of urine excreted—its colour—specific gravity—albumen, characteristic but variable in amount, and inconstant. Necessity of frequent and repeated urinary examinations. Low percentage of urea in granular kidney—character of sediment—scanty. Form of tube-casts. The cardiac changes—their frequency and diagnostic significance. Cardiac complications sometimes the first indications of the disease. Bright's explanation of the cardiac hypertrophy. Traube's view—Gull and Sutton's—arterio-capillary fibrosis. The cardiac hypertrophy, an explanation of (1) the polyuria, (2) long absence of uræmia, (3) albuminuria, (4) liability to apoplexy. Frequency of epistaxis. Retinal lesions. *Post mortem* appearances in granular kidney.

We have already discussed one of the forms or types of Bright's diseases—namely, that whose anatomical character is "the large white kidney," and which, from a pathological point of view, is usually spoken of as "parenchymatous nephritis." We now come to the consideration of another type, which is spoken of anatomically as the *contracted kidney*, the *granular kidney*, the *small red kidney*, and also occasionally as the *gouty kidney*, or even as the *saturnine kidney*. In the opinion of the greater part of French and German physicians, the various alterations of the kidney discovered in autopsies of such subjects as, during life, have suffered from albuminuria and anasarca, correspond to the various successive phases of the same, or to one, morbid process. This doctrine

[a] The text of the essays of Professor Carl Bartels, of Kiel, and Professor Wilhelm Ebstein, of Goettingen, in Volume XV. of the "Cyclopædia of the Practice of Medicine," edited by Dr. H. Von Ziemssen, has been followed as closely as possible, with additional notes from all the best authorities on the subject.—A. W. Foot.

may be termed the *theory of the unity* of Bright's disease. According to another view, which may be termed the *theory of the multiplicity* of the forms of Bright's disease, the various forms of renal alteration revealed by the autopsy represent not the successive phases of the same process, but so many distinct anatomical states, with which are connected during life so many distinct clinical histories. This doctrine may be called the English theory, since it is especially in England that it has for twenty years been sustained and developed. To this doctrine Prof. Charcot says he has long been a convert; and, in his opinion, "Bright's disease is a class comprising several distinct species, not only from an anatomo-pathological point of view, but as regards etiology and symptomatology." Bright himself gave this matter consideration, but seems not to have arrived at any final conclusion. "I have been led to believe," he says, "that the kidney in renal dropsies is affected by various forms of disease;" but elsewhere he says, "I am not certain that these views are correct," and adds that the three forms he has described are perhaps only modifications or stages, more or less advanced, of one and the same disease. The doctrine of the *multiplicity* of the forms of Bright's disease counts in England among its ablest supporters Goodfellow, Dickinson, and Grainger-Stewart, while on the Continent almost all the recent authorities, of which a list is given below,[a] concur in this view. G. Johnson was one of the first to reject the generally received theory of the unity of Bright's disease, advancing against it an argument of the greatest weight derived from clinical experience. "There are very few exceptions to the rule," says Johnson,[b] "that patients dying with the large Bright's kidney have had dropsy, in a greater or less degree, at some period of their history; whereas the majority of those who die with a contracted kidney have not suffered from dropsy in any form or degree." He also gives statistics which show that in twenty-six cases of the large white kidney, twenty-four were affected with dropsy, which is, so to speak, the rule in that form characterised by the large white kidney; while out of thirty-three cases of contracted kidney, it occurred only fourteen times, and, even in these cases, was scarcely perceptible.

Charcot[c] tersely epitomises the life-history and pathology of this form of Bright's disease—viz., the *granular* or *contracted kidney* (interstitial nephritis).

[a] Lecorché—Traité des Maladies du Rein. Lancereaux—article Rein in the Dictionnaire Encyclopédique des Sciences Médicales, 1875. Bartels—Cyclop. of Pract. of Medicine, H. von Ziemssen, Vol. XV. Edward Bull—Klinische Studien über chronische Bright'sche Krankheit, Christiania, 1875. Labadie-Lagrave—Rev. des Sci. Med., 4th year, Vol. VIII., 2nd fascicule, 1876.

[b] Med.-Chir. Trans., 1859. Vol. XLII., p. 156.

[c] Bright's Disease of the Kidneys. 1879. P. 37.

Etiology.—Subjects affected by it succumb between the age of fifty and sixty; etiological conditions but little known; the influence of gout, lead-poisoning, and alcoholism appear, however, to be well demonstrated.

Evolution very gradual; the disease always of a chronic character; may last several years—ten years, for example.

Symptoms.—Œdema is absent in more than half the cases; often it is scarcely appreciable. Urine abundant, at least in the first stage; sometimes real polyuria; it is clear, pale, of a feeble specific gravity; albuminuria slightly marked, and may be absent from time to time; the urine contains but few casts. At an advanced period, however, œdema supervenes, or augments if it previously existed, and the albumen may be found in the urine in greater quantities.

Complications quite frequent, constituting one of the most important characteristics of this form; hypertrophy of the left heart, without valvular lesion; albuminous retinitis, almost peculiar to this form; hæmorrhages from various passages; frequent arterial atheroma; visceral inflammations, pneumonia, pericarditis, &c. This class of cases generally terminates in uræmia.

Anatomical Characters.—Kidney small, being only half its normal weight; the capsule is closely adherent; the surface of the kidney is of a reddish tint, and has a sandy, granulated appearance; the granulations small, nearly uniform in size, are regularly disseminated over the surface of the kidney, which presents here and there small cysts. Section shows that the atrophy affects the cortical substance, which may be reduced to a thin layer.

Histologically we have to deal with a genuine cirrhosis of the kidney—the connective tissue is primarily affected, the epithelium being affected only consecutively. It is then an interstitial nephritis.

A more detailed consideration of the clinical history of interstitial nephritis, or renal cirrhosis, will show that genuine contracting kidney may have existed for a considerable time, and may have reached a serious degree of development before the patient becomes aware, by any kind of symptom, that his health is no longer as good as it used to be. In proof of this fact there is on the one hand the no small number of cases in which the kidneys have been found in a state of advanced atrophy in persons who, up to the date of their death, had both fancied themselves and been regarded by their friends as perfectly healthy. On the other hand, it still oftener happens that patients die either suddenly of the immediate results of their renal malady, or after a short illness of such an indistinct kind and trifling nature that they disdain to summon medical advice. It is probable that the actual first beginning of this disease (granular kidney) always eludes diagnosis—the symptoms which accompany the development and progress of the affection, at least in its earlier stages, are not calculated to direct the patient's own attention to the

kidneys as the part at fault. The only thing which disturbs these patients is the frequent desire to pass water, which is principally apparent at night, and they are apt to attribute their other sensations of malaise to the effect of taking cold, which they suppose they must have been exposed to in getting up to make water during the night. Neither pain nor any other discomfort in the renal region appears to attend the affection at any period of its course. In the well-marked cases, however, the deviation of the renal functions from their normal standard is so characteristic that the affection can be recognised by examination of the urine alone, and this although no other symptom may seem to point to this malady. In the first place the quantity of urine excreted during the twenty-four hours is always remarkably increased, so that these patients urinate far more abundantly than sound persons of similar form and build, unless they be excessive drinkers. It is self-evident that a patient who passes a great deal of urine must repair this loss by the ingestion of a large quantity of fluid. Hence arises the very common mistake of these patients supposing that they have diabetes, because of their thirst and excessively frequent micturition. The most exteme instance of polyuria with which Bartels has met was in the case of a gentleman, forty years of age. He succeeded in measuring the entire quantity of urine which he passed during a night of twelve hours' duration—*i.e.*, from 8 p.m. to 8 a.m. This consisted of 6,000 c.c. (211 fl. ozs.), it had a specific gravity of 1,004, and contained albumen. In a private case in which he estimated the entire quantity of urine passed for a whole month, the patient excreted on an average 3,350 c.c. (117 fl. ozs.) daily. In another case, treated in hospital, the daily mean average amount of observations extending over six months, and involving seventy-six measurements, was 2,200 c.c. (77 fl. ozs.) per diem.[a] So profuse an excretion as this, of course, compels the patient to urinate frequently, and it is a remarkable fact that the patients are invariably more tormented with the desire to pass water by night than by day. One of Bartels' patients, for example, who throughout his day's work, from 9 a.m. to 4 p.m., had no call to empty his bladder, was forced to get up three or four times every night to urinate. It appears that this greater frequency of the desire to micturate at night is founded upon the more abundant secretion that takes place at this time. Exact observations in renal cirrhosis have shown that a much larger quantity of water is secreted by the kidneys by night than during the day, but this difference in the functional activity of the kidney during different periods of the twenty-four hours is not invariable in granular atrophy, because some cases, tested in this particular direction, show the same behaviour of the

[a] According to Vogel the mean average daily urine excretion ("individual urinary capacity") for a thoroughly sound adult may be reckoned at from 1,200 to 1,400 cubic centimetres (42 to 49 fl. ozs.) for those who drink moderately, and from 1,400 to 1,600 cubic centimetres (49 to 56 fl. ozs.) for persons who drink freely.

kidney as in healthy individuals—namely, that more water is secreted by day than by night. The colour of the urine, corresponding with its large amount, is, as a rule, pale yellow, or more often yellowish-green. Generally it is clear, and in most cases it deposits no sediment. Its specific gravity is, as a rule, low, and corresponds to the amount of fluid passed—for months and even years it may fluctuate daily between 1,004 and 1,012. Although albumen in the urine forms one of the characteristic symptoms of the disease (interstitial nephritis) yet it is no constant symptom in this affection. Albumen may be entirely absent from the urine throughout the whole progress of the case, but more commonly it alternately appears and disappears, a phenomenon which seems to depend upon the patients moving about or remaining at rest in bed—in other words, upon the amount of muscular exercise they take. Under all circumstances, however, the amount of albumen contained in the urine in the course of genuine contracting kidney is insignificant in comparison with the high percentage furnished in inflammatory processes affecting the same organ. The quantity of albumen furnished by a contracting kidney fluctuates between a scarcely perceptible cloudiness on boiling and an amount of five parts by weight of dry albumen to 1,000 parts by weight of urine. The daily loss of albumen sustained by patients in this disease reduces itself, in spite of the ordinarily profuse urinary secretion in most cases, to an extremely small sum per diem. In no other disease of the kidneys is the amount of albumen contained in the urine of one and the same individual subject to such great variations according to the mode of life, the food, and the general state of nutrition. Although the most important evidence of contracting kidney we can obtain is derived from *accurate examination of the urine*, yet, as Bartels forcibly urges, one must not fancy that this information is to be obtained by the analysis of single samples of urine. There exists, he continues, no renal malady in which the danger of deceiving oneself is so great, if only a few, and these incomplete, examinations of the urine are instituted; for it is just in these very cases of genuine contracting kidney that urine is occasionally and temporarily excreted, which is in no way to be distinguished from that secreted by healthy kidneys.

Corresponding to the low specific gravity of the urine in contracting kidney, its percentage of solid constituents, and especially of urea, is abnormally small. As a rule, in well-marked cases, the percentage of urea stands between 1 and 2 per cent., and occasionally even falls below 1 per cent. The urine in this disease usually deposits very little sediment, and often absolutely none at all. Great care must be taken in collecting any sediment which may be present for microscopic examination, on account of its very minute quantity. In it there may be found a few scattered casts, together with some crystals of uric acid or oxalate of lime. Many specimens must be put up, and long search be made before dis-

covering even a few of the casts, which are generally of the narrow variety, and perfectly hyaline.

Cardiac changes are so frequent, and of such a constant character in contracting or granular kidney (interstitial nephritis), that their presence adds the strongest presumptive evidence to the diagnosis of this form of renal alteration. Dickinson[a] says that, in fact, he has got to regard simple cardiac hypertrophy as one of the most important diagnostic signs of renal fibrosis, while Traube observes that one can recognise the renal disease by the pulse. This hypertrophy of the left ventricle without valvular lesion, which so often accompanies interstitial nephritis, is the more worthy of mention as it is almost never seen in cases of parenchymatous nephritis (the large white kidney). In interstitial nephritis, on the contrary, Dickinson met with it in thirty-one out of sixty-eight cases. According to Traube it is found in ninety-three cases out of one hundred, and according to Grainger-Stewart[b] it is present in almost every advanced case.

In this most insidious malady—the cirrhotic or contracting form of Bright's disease—it is not uncommon for the renal affection to be detected only when the complications have drawn attention to it. When the initial manifestations of the disease proceed from the heart, the patients often complain of occasional attacks of palpitation, accompanied sometimes with vertigo. More often they occur with a sense of great uneasiness, or with a feeling of suffocation or want of breath. The radial pulse is remarkably tense and bounding. Then, upon carefully examining the chest, the objective signs of enlargement of the heart are discovered. Any hypertrophy of the left ventricle, without valvular lesion of the heart to explain its occurrence, ought to direct attention to this renal malady as possibly existing. Dickinson[c] speaks of it as a clinical landmark of no small value, and says that it may be taken as a practical rule to which there are few exceptions, that, if the cardiac hypertrophy is marked, the kidneys have either primarily or secondarily undergone fibroid change—in other words, if the heart be hypertrophied (always excluding other obvious causes), the kidneys are the seat of grave and, probably, intractable disease. Bartels states that he has never failed to observe the signs of hypertrophy of the left ventricle in any of his cases of genuine contracting kidney, or to confirm the fact in every *post mortem* made upon their bodies. It sometimes happens that the cardiac state may not attract notice by its symptoms, though it is at once evident to auscultation.

Bright was acquainted with the fact that hypertrophy of the heart occurs in a very large proportion of cases of contracted kidney when the

[a] Diseases of the Kidney. 1877. P. 410.
[b] Bright's Diseases of the Kidneys. 1868. P. 131.
[c] Op. cit. P. 556.

disease has reached an advanced stage, and he suggested as a probable explanation that "the altered quality of blood so affects the minute and capillary circulation as to render greater action (of the left ventricle) necessary to force the blood through the distant subdivisions of the vascular system." It is objected to Bright's view that he failed to show that the blood was really already impure at the time when the heart-hypertrophy began, and modern exactness calls for chemical proof of the impurity of the blood or its serum before it will assent to charge it with such results. Both Frerichs and Traube also object to Bright's explanation. Traube's opinion (in favour of which Bartels expresses himself most distinctly) upon the mode of origin of cardiac hypertrophy in renal atrophy is that it is the result of increased tension in the arterial system—a tension which must of necessity take place as soon as a great number of arterial branches in the kidneys, with the Malpighian tufts attached to them, become obliterated (by the proliferation of the intertubular connective tissue), and when the channels through which the blood of the renal artery must drain away are reduced within narrower limits. He places the consequences of renal contraction in the same category with the results which deficiencies of the mitral valve and certain diseases of the lung exert upon the right chambers of the heart.

This hypertrophy of the heart is said to be the result of the renal obstruction. If this, however, be the case, why is it not observed in parenchymatous nephritis (large white kidney) or in the amyloid kidney, in the former of which, at all events, the embarrassment of the circulation is strongly marked, in consequence of the vessels being compressed in the cortical substance? To this question theory answers (says Charcot[a]) that persons affected by parenchymatous nephritis are debilitated subjects, in whom for various reasons, and particularly on account of the great loss of albumen, the nutrition is profoundly affected—the nutrition of the heart being equally so with the other organs. In interstitial nephritis, on the contrary, nutrition continues normal for many years, and as the disease is developed in a very gradual manner, there is all this time for the hypertrophy of the heart to be brought about. Such is not the case with parenchymatous nephritis, where, in consequence of the comparatively rapid progress, the equilibrium is quickly destroyed. Gull and Sutton deny the connexion between renal contraction and hypertrophy of the left ventricle as cause and effect, holding both events to be joint results of one general affection, "*arterio-capillary fibrosis*," which they hold is extended throughout the entire arterial system, or spread over the greater part of it. Bartels observes—"They appear to be perfectly unaware of Traube's theory—at all events they make no mention of it."

The consecutive hypertrophy of the heart which obtains in granular disease of the kidneys is the key towards interpreting a whole series of

[a] Bright's Disease of the Kidneys. 1879. P. 57.

symptoms which accompany the disease. *Polyuria*, the ordinary symptom of renal contraction, is a result of the increased blood-pressure in the aortic system. In this way the hypertrophy of the left ventricle acts as an efficient compensation for the loss of renal secreting-tissue such as the kidney contraction carries with it. As long as the condition of the hypertrophied left ventricle is capable of maintaining the blood-pressure in the aortic system at its abnormal height, contracting kidneys which have dwindled down to more or less considerable remnants of secreting glandular-tissue not merely continue to secrete urine, but in the large proportion of cases actually furnish, in the same interval of time, a larger quantity of urine than healthy kidneys would supply. The *long absence of uræmia* is also connected with these consecutive cardiac changes. So long as the hypertrophied heart labours energetically, no uræmic symptoms occur, for an overabundant secretion of urine is being carried on, and, in consequence, there is sufficient rinsing and washing out of the secreting gland-cells. But directly this excess of blood-pressure fails from any cause, or the urinary secretion, in consequence of transitory or permanent weakness of the heart, is diminished, uræmic symptoms set in, and not rarely dropsy sets in at the same time, or even before. That uræmic symptoms depend rather on failure of the heart's force than from wasting of the renal substance to a degree which renders them hopelessly impotent, we learn from the cases where patients survive their first acute uræmic attack for years. The *albuminuria* in this disease is to be entirely attributed to the increase of the blood-pressure in the vascular tufts rather than to structural changes in the kidneys themselves; and the best proof of the correctness of this proposition is its disappearance and reappearance, or its diminution and increase according as the patients observe conditions of rest and muscular repose, or persist in their usual avocations. The absence of a profuse drain of albumen, and the constancy of the polyuria so characteristic of this disease, is the reason that no hydræmia occurs. Hence it comes to pass that this affection, in more than one-half of all the cases, terminates fatally without the patient ever having been dropsical. The usually small loss of albumen in the urine affects the general nutrition so very little, while the organs of digestion continue to fulfil their functions regularly, that its influence is scarcely to be remarked, although it may, perhaps, have lasted for years. Hence it happens that when the renal affection is first distinctly recognised, it is impossible to say how long it may have already existed.

While the hypertrophy of the left ventricle must be credited with considerable compensatory advantages in granular kidney, there are certain dangers and disadvantages with which the increased arterial tension produced by this hypertrophied heart threatens the patient. The evil influences of this condition are most evident in the relatively frequent occurrence of cerebral hæmorrhages in genuine contracting renal disease,

the true explanation of which no one, surely (says Bartels), will seek elsewhere than in the notoriously abnormal high pressure maintained in the arteries, inasmuch as cerebral apoplexy in renal disease may attack persons who are comparatively young, and whose arterial walls are quite healthy. However, the influence in these intracranial hæmorrhages of *alterations in the vessels* cannot be wholly ignored. Chronic endarteritis or arterial atheroma is one of the lesions most frequently met with in those who succumb to interstitial nephritis (granular kidney), partly in consequence of the circulation of morbid blood, partly as a result of the unusual strain and pressure to which they are subjected. At length in the struggle between the propelling hypertrophied left ventricle and the resisting arterioles, a brittle vessel gives way, and a fatal hæmorrhage occurs.[a] In reference to the unexpected nature of the attack, Dickinson[b] observes that those who die of apoplexy (in this disease) are apt to be struck, not in the wards of a hospital, but while they are going about making use of what health they have. The same author remarks that bleeding from the nose often happens, and sometimes proceeds to an alarming extent; it is more frequent with this than with any other form of renal disease, though very common as a consequence of lardaceous change. Rayer points out that epistaxis is often one of the phenomena which precede and announce uræmic poisoning. Epistaxis is the most common form of hæmorrhage in this disease, though bleeding from any of the mucous surfaces may occur. Its appearance in the form of menorrhagia, as West has pointed out, may afford a clue to a correct diagnosis.

Certain retinal lesions are quite frequent in this form of Bright's disease, which are in a measure unknown in parenchymatous nephritis (large white kidney). These lesions, which present the appearance of white plates, variegated by small hæmorrhagic striæ, are situated in the retina, particularly in the neighbourhood of the papilla. So characteristic are these alterations, when well developed, that they are sufficient of themselves to establish the diagnosis of interstitial nephritis. Although this is not infrequently the first sign of the disease to be recognised, Dickinson believes it to be always an indication of an advanced stage of the disorder. Both eyes are always attacked, although they may suffer in unequal degrees. It gives grounds for a very unfavourable general prognosis. In some cases a curious symptom accompanies these lesions—metamorphopsia—crooked sight—*i.e.*, straight lines seem bent. In general, obscurity of vision commences quite gradually, showing itself as simple diminution in the acuteness of sight; and the patient, consulting an oculist for the choice of glasses, is found to have interstitial nephritis. This disturbance of vision is quite different from the amaurosis uræmica, of cerebral origin, in which the disorder of

[a] Lectures on Bright's Disease. Geo. Johnson. 1873. P. 68.

[b] Diseases of the Kidney. Part II. P. 413.

vision commences suddenly and may as suddenly subside again, while no retinal changes are observable which serve to explain its cause.

As to the *post-mortem appearances* in interstitial nephritis, the genuine contracting disease affects both kidneys, and each organ equally in most instances. The result of the disease in well-marked cases is a very considerable reduction in the volume of the two glands, so that in extreme cases they do not appear larger than children's kidneys, and often much smaller. It is the cortical substance which is the principal seat of the atrophy—an atrophy so considerable that in some cases a quite small margin of cortical substance surrounds the basis of the pyramids. From the most commonly obvious naked-eye appearance the kidneys are very frequently called granular. A granular kidney is one of which the surface, when the capsule has been removed, instead of being level and smooth, has upon it little projections, each of which forms the segment of a sphere, and which have been described as granulations. In kidneys which have acquired granular outsides a certain definite change has invariably taken place in the fibrous tissue by which the tubes are separated. The change is closely analogous to that which produces cirrhosis of the liver. A morbid increase in the intertubular tissue of the organ begins at certain points upon the surface and extends inwards. The new growth contracts as it is formed, and, in contracting, not only encloses and compresses such parts of the gland as are in its path, but draws in the surface at its point of origin. This intraction taking place at regular intervals results in alternate elevations and depressions—or, in other words, in granulation—the size of the granules being regulated by the distance between the starting points of the new formation. The first change which can be recognised as a result of the disease is unevenness of surface. The capsule is more adherent and thicker than natural; on removing it, some part of the surface has lost its even curve and is beset with little half-formed projections of small size and almost inappreciable prominence. In an early stage of granular degeneration the organ is not much altered in bulk; in texture it is, perhaps, harder than natural. In a section of such a kidney, examined under the microscope, small fibrous processes may be found starting inwards from the depressions upon the surface. In an advanced and well-marked condition of granular degeneration the kidneys are much reduced in size, so much so that a kidney which should weigh five or six ounces may weigh only two or three. The longer the disease lasts the smaller the kidneys become. When the disease progresses more in one kidney than in the other there is an inequality of size. In advanced cases, when the thickened and opaque capsule is stripped off, the exposed surface is found studded with prominent hemispherical granulations, often about one-sixteenth of an inch in diameter, though they may be larger or smaller than this. These granules usually have a bright colour like that of parched peas, while the depressed spaces between

are tinted with vascularity, so as to have a purplish or faint red colour. The superficial vessels are only seen in these intermediate spaces where an irregular network often exists, forming a contrast with the prominences, which are always bloodless. Cysts are often conspicuous on the surface. Upon a section through the centre of the gland the cortical part appears to have undergone most alteration. Often the portion lying between the cones and the capsule is reduced to the thinness of a shilling.

[*To be continued.*]

TANNATE OF PELLETIERINE AS A TÆNIAFUGE.

The active principle of the bark of the punica granatum, discovered by M. Tauret, and described by him under the name of *pelletierine*, has been used with success as a remedy for tænia. It is given in the form of the tannate, in the dose of 50 centigrammes, followed in two hours by 30 grammes of castor oil. Dr. Laudrieu describes its action as follows:—In the two cases observed neither colic nor headache was occasioned. In the first the patient had been prepared by dieting, and a single dose sufficed to expel the tænia entire. In the second one dose did not suffice, it is true, but the patient was not weakened by the treatment. The patients did not exhibit that repugnance so constantly shown to the administration of kousso or the pomegranate bark. In a third case the administration of a dose of the chlorhydrate of pelletierine brought away 15 metres of worm, the only phenomena observed being diplopia and a slight tendency to syncope, both of which quickly passed off. The pulse and temperature were not influenced by this medicine; nor were the kidneys in any way affected. The medicine seemed to have an elective and toxic action, operating solely on the tænia.—*Jour. de Méd. de Bordeaux*, June 28, and *N. Y. Med. Rec.*, Sept. 6, 1879.

SALICYLIC ACID IN THE TREATMENT OF LUPUS.

Dr. Ameglio reports a case of ulcerative lupus of the face, of five years' duration, in which he employed salicylic acid locally, after all the usual applications had proved ineffective. The ulcerating surface was painted three times a day with a solution of six parts salicylic acid in twenty parts glycerine. After a few days the readily bleeding vegetations withered, and the floor of the ulcer took on a healthy appearance; at the end of the month cicatrisation was completed. The patient at the same time took arsenic internally.—*Gaz. degli Ospedali*, June, and *N. Y. Med. Record*, Sept. 6, 1879.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, M.D., F.K.Q.C.P.

Vital Statistics

Of Eight Large Towns in Ireland, for Four Weeks ending Saturday, October 4, 1879.

Towns	Population in 1871	Births Registered	Deaths Registered	Deaths from Zymotic Diseases							Annual Rate of Mortality per 1,000 Inhabitants
				Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhœa	
Dublin, -	314,666	780	631	25	2	23	1	5	20	24	26·1
Belfast, -	182,082	503	288	1	2	2	1	16	9	18	20·8
Cork, -	91,965	199	179	—	1	23	—	—	4	1	25·3
Limerick, -	44,209	118	66	—	—	1	—	—	3	1	19·5
Derry, -	30,884	75	44	—	—	—	1	—	2	1	18·8
Waterford, -	30,626	71	49	—	—	—	—	—	1	1	21·0
Galway, -	19,692	35	34	—	—	—	—	—	1	—	22·5
Sligo, -	17,285	23	19	—	—	—	—	—	1	—	14·3

Remarks.

A high rate of mortality prevailed in Dublin and Cork. In the remaining six towns the death-rate was moderate or low. It was 18·5 per 1,000 of the population annually in London, 15·6 in Edinburgh, 16·5 in Glasgow, and 27·2 within the municipal boundary of Dublin. Omitting the deaths of persons admitted into public institutions from localities outside the district, the death-rate of the Dublin registration district falls to 25·4—a figure which is still far above the rates in the chief cities of England and Scotland. Zymotic affections were credited with 130 deaths in Dublin, an increase of 13 over the preceding four weeks, but considerably below the average number (153·2) in the corresponding period of the previous ten years. Smallpox, scarlatina, and diarrhœa were much more fatal than in the preceding four weeks. Of the 20 deaths caused by fever, 7 were returned as due to typhus, 11 to typhoid, and 2 to continued fever of undetermined type. On October 4, 69 smallpox patients were under treatment in the Dublin hospitals, compared with 55 cases on September 6 and 40 cases on August 9. Whooping-

cough is still a fatal epidemic in Belfast, and scarlatina is very prevalent in Cork. Diseases of the organs of respiration caused 90 deaths in Dublin, including 72 from bronchitis and 10 from pneumonia. The average deaths in the preceding ten years were—respiratory affections generally, 59·6; bronchitis, 40·0; and pneumonia, 10·5. In twenty English towns diarrhœa caused 862 deaths, compared with 1,104 in the previous four weeks. With the advance of autumn the deaths from diarrhœa became fewer week by week. They were 275, 226, 209, and 152 respectively in the four weeks.

Meteorology.

Abstract of Observations made at Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of September*, 1879.

Mean Height of Barometer,	29·908 inches.
Maximal Height of Barometer (on 1st at 9 a.m.),	30·428 „
Minimal Height of Barometer (on 7th at 3.15 p.m.),	29·151 „
Mean Dry-bulb Temperature,	53·8°
Mean Wet-bulb Temperature,	51·4°
Mean Dew-point Temperature,	49·2°
Mean Elastic Force (Tension) of Aqueous Vapour,	·349 inch.
Mean Humidity,	84·9 per cent.
Highest Temperature in Shade (on 3rd),	67·5°
Lowest Temperature in Shade (on 24th),	41·5°
Lowest Temperature on Grass (Radiation) (on 30th),	34·8°
Mean Amount of Cloud,	63·0 per cent.
Rainfall (on 18 days),	2·046 inches.
General Direction of Wind,	W.S.W., W.

Remarks.

A changeable, showery month, with, however, a spell of dry weather from the 13th to the 20th inclusive. The mean temperature was 1·5° below the average of the previous 13 years. At the beginning of the month an anticyclone lay over the southern part of the British Islands—the barometer exceeding 30·40 inches over the south of Ireland, Wales, and the greater part of England. Owing to the calm clear state of the atmosphere very low temperatures at night were recorded at this time. On the 2nd the weather became unsettled, specially in the N. On the 7th a very deep depression crossed Ireland from S.S.W. It was accompanied by continuous heavy rain, more than $3\frac{1}{2}$ inches falling at Mullaghmore, near Sligo, within 24 hours. The period from the 13th to the 20th inclusive was characterised by pleasant autumnal weather—dry and quiet, but often cloudy or overcast. The 15th and 16th were dull but dry—the "grey" weather being caused by the cloud-canopy which so frequently attends a winter anticyclone. The morning of Monday,

the 22nd, opened with bright cold weather in Dublin, where at 9·45 a.m. a striking and beautiful display of solar halos and parhelia, or "mock suns," became developed in a thin sheet of cirriform cloud which overspread the sky from W.N.W. This phenomenon proved to be the precursor of an unusually deep atmospherical depression which travelled by the west coast of Scotland to N.N.E. on the 23rd. As the disturbance approached, the barometer gave way with great rapidity. At Stornoway, in the Hebrides, it fell from 29·62 inches at 8 a.m. of the 22nd to 28·37 inches at the same hour next day—the fall in 14 hours amounting to 1·16 inches. Very strong S. to W. gales were felt at many stations. Only a little rain accompanied the disturbance in Dublin; but hailstorms occurred in central Ireland and in London on the 24th. Very low night temperatures were recorded towards the close of the month, the thermometer in the shade falling to 33° at Nottingham and to 31° at York on the night of the 29th. In Dublin lightning was seen on the eastern horizon at 9 p.m. of the 24th; a lunar halo appeared on the 1st, and solar halos on the 22nd, 24th, 25th, 27th, and 30th; the atmosphere was foggy on the 17th and 24th.

A NEW TEST FOR THE PRESENCE OF BILIARY COLOURING MATTER IN THE URINE.

Nitric and hydrochloric acids, according to M. Masset, are not as delicate tests for the colouring matter of the bile as nitrate of potassium. The urine to be examined should be acidulated by two or three drops of concentrated sulphuric acid, and a small crystal of the nitrate dropped into it. The reaction is immediately established, a beautiful grass-green colour being produced if the quantity of the biliary colouring matter is large. On shaking the liquid the colour becomes uniform and of a deep tint; boiling does not change it, and it may be preserved for several days without alteration. The addition of water simply diminishes the intensity. If the biliary matters are present in but small quantity, the liquid takes in a very short time a pale green colour, which also is persistent; it can easily be perceived by placing the tube between the eye and daylight, or in front of a white background. In these circumstances normal urine should present a light rose colour. At the beginning of certain maladies, where the ordinary tests are useless, this reagent, it is thought, will be of service on account of the facility of its application and the distinctness, delicacy, and constancy of the reaction; further, it is not subject to the errors of observation, or the uncertain or erroneous interpretations attendant on the usual methods of examination.—*Journal de Médecine*, May, and *N. Y. Med. Record*, Sept. 20, 1879.

PERISCOPE.

Edited by G. F. Duffey, M.D., F.K.Q.C.P.

EFFECTS OF "PITHING" ON THE VASCULAR SYSTEM.

Dr. Poole, of Ontario, author of a work on "Physiological Therapeutics," in an article under the above heading, in the New York *Medical Record*, Sept. 13, 1879, endeavours to establish certain points, which he summarises as follows:—1. Destruction of the nervous centres is attended, not by relaxation of the arteries, as has been asserted, but by a marked and uniform contraction and emptiness of these tubes. 2. Arterial contraction cannot be dependent on nervous agency, nor can arterial dilatation be the effect of vasomotor paralysis. 3. The vasomotor theory at present in vogue is erroneous, untenable, and at variance with the facts it is intended to explain. 4. There are strong and valid reasons for believing that the real function of the vasomotor nerves is, not to contract, but to dilate the arteries. 5. Similarly strong and valid reasons exist for the opinion that the varying calibre of the arteries is due to the antagonism between the dilating influence of the vascular nerves and the inherent contractile power of the muscular fibres of these tubes; contraction or dilatation resulting in proportion as one or other of these opposing forces predominates.

THE TREATMENT OF ORGANIC HEART DISEASE.

The following extract from the New York *Medical Record*, Sept. 27, gives the treatment of the above disease adopted in the Hospital of the University of Philadelphia:—In those instances where there is a maximum amount of cardiac force, with a minimum amount of valvular lesion, cardiac sedatives are regarded as the remedies *par excellence*. Veratrum viride, aconite, the bromide of potassium, and other bromides are given in small and continued doses. The need of cardiac sedatives has been found to be most marked in diseases of the mitral valve, where there is a marked tendency to hypertrophy of the left ventricle. In these cases the diet allowed is cooling and restricted; circulatory and nervous stimulants are avoided. If the general system is plethoric a saline depurative is administered. The diet, though restricted, is not reducing—*i. e.*, the blood is not reduced in quality by it, though it is of such a kind as to be easily digested. Where the valvular lesion has been the result of an endocarditis contracted in early life, it has often been found possible to accomplish the greatest amount of good by continuous doses of the iodide of potassium. This treatment has often cured young children with

hypertrophied left ventricles and mitral disease. In those cases of heart disease showing impairment of power, and occurring late in life, the most important item of treatment is rest and the avoidance of all muscular effort. Such patients are given beds on the ground floor, and never allowed to mount stairs. In bad cases rest upon one floor and in one room is insisted upon. The question of diet in the treatment of heart disease has received unusual attention in the medical wards of this hospital. The diet is studied in connexion with the state of the system. When the digestion is good and the blood not in abundance, the patient is allowed bread, meat, fruits, and green vegetables quite freely. Some such patients have been benefited by a lean meat diet. No patient in this condition can digest oil well. In those cases where the digestion is not good, koumyss, buttermilk, or skimmed milk is given. Where the secretions are scanty and dropsy is present, the diet prescribed is exclusively one of milk. Such patients are not allowed to eat much at a time, but take food frequently and in small quantities. Where spasms of cough and of dyspnœa occur at night, the patient is only given a small amount of stimulus and liquid nourishment for some hours before going to bed. [To return for a moment to the question of rest. In some mild cases of heart disease, gentle, moderate walking is strongly advised, but in no instance is needless running hither and thither allowed.] For the relief of the various congestions consequent upon heart disease counter-irritants are applied over the affected part. Where nervous and head symptoms predominate, dry cups are applied to the nape of the neck. In pulmonary congestion muriate of ammonia is given internally in addition to the external counter-irritation. The bromides are used in cerebral congestions. When the stomach is congested, blue mass is prescribed. When the appetite is poor, the stools insufficient, the liver tender upon palpation, and the secretions of the intestines scanty, blue pill, followed by a saline laxative, is a favourite remedy. Renal congestion is put a stop to by digitalis, together with a saline diuretic. When the system is in an anæmic state, when the blood is watery, and when it is deficient in red globules, iron is given with advantage. Active plethora is always regarded as a counter-indication to the use of iron. The iron, when given, is administered in the form of a laxative ferruginous water, or a diuretic ferruginous mineral water. In the treatment of the various dropsies complicating heart disease, cups, blisters, iodine painted on the surface, or iodine with croton oil is used. In some cases the dropsy is entirely cured by rest and a skimmed-milk diet. In cases of anasarca the most rapid relief is obtained by the use of jaborandi. Where the heart is so weak that jaborandi cannot be used, resort is had to the laxatives, or warm vapour-baths. Ascites is met by saline diuretics; hydrothorax by diaphoretics and diuretics. The patient's whole body is periodically examined physically, to see that no effusion is making head-

way. If the dropsy becomes otherwise unmanageable, resort is had to operative measures, and the skin is tapped—a number of minute punctures being made in the skin with delicate needles. Where there is a faulty condition of the nervous ganglia of the heart, associated with the organic disease, digitalis is employed with great benefit. Where one preparation of this drug is not borne by the stomach, another is substituted. Where the separate contractions of the heart are evidently inefficient, and the pulse is weak and small, digitalis has proved itself an unrivalled remedy. The usual dose of the tincture is gtt. x.; of the infusion, f ʒ i.; and of digitalin, gr. $\frac{1}{60}$ every three hours. Belladonna has been of service where the heart's action is strong but irregular. Where the heart muscles are weak and passive congestions are rife, strychnia and quinia are prescribed.

SCILLINE, SCILLIPICRINE, AND SCILLITOXINE: THE ACTIVE PRINCIPLES OF SQUILL.

Squill, though deservedly placed in the first rank among diuretics, labours under the disadvantages of being uncertain in its action, owing to the difficulty of obtaining the bulbs in the proper condition, and of possessing an acro-narcotic principle which proves poisonous to some individuals, even when only moderate doses are taken. These disadvantages are now overcome, it is claimed, by Merck, of Darmstadt, who has succeeded in isolating the active principles of the bulb, and is thus enabled to exclude the poisonous principle and obtain a uniform preparation, which is adapted even for subcutaneous use. The substance called *scillitine*, which has been obtained from the fresh bulbs by extraction with alcohol, is a mixture of the three principles separated by Merck—a fact that accounts for the variability of its action. Dr. Fronmüller, of Furth, has tested Merck's three preparations of squill on fifty-three cases, and draws the following conclusions concerning them:—1. Scillitoxine, in the majority of cases, produces pretty free diuresis, but it contains the greater part of the toxic principles of the squill, and hence is not suited for clinical use. 2. Scilline also is not adapted for practical use, because it exists only in minute quantities in the bulb—is very dear, and seems to be inactive unless given in large doses. 3. Scillipicrine, dissolved in water, and administered hypodermically, has proved to be a diuretic of the first class, second to none other in efficacy. Out of seventeen cases of oliguria, it failed only twice. In twelve of the fifteen successful cases the quantity of urine was doubled, and often even more, and in one it was increased sixfold. No symptoms of poisoning were produced, thanks to the separation of the scillitoxine. The only disagreeable effect produced was a more or less intense irritation at the site of the injection; this was absent only in two cases, and in four it was pretty severe. In one case four tablespoonfuls per diem of a two per cent. solution of the scillipicrine

were given internally without any effect. For the subcutaneous injections a ten per cent. solution was employed in most of the cases; in only one is it stated that a second injection was practised. In two of the cases the increased excretion of urine was accompanied by thin passages from the bowels.—*Allg. med. Cent. Zeit.*, August 6, and *N. Y. Med. Record*, October 4, 1879.

EXTERNAL APPLICATION OF THE BROMIDE OF POTASSIUM.

THE good effects obtained from bromide of potassium in all reflex irritations due to teething are well known, but M. Peyraud claims that better results can be obtained from direct local application of the remedy to the gums, than from its internal administration. He uses a mixture of the bromide one part, to honey six or seven parts, with sufficient water to dissolve the salt, and enough alcohol to preserve the mass. This should be gently rubbed on the gums four or five times a day; in cases of diarrhœa caused by dentition, a few drops of Sydenham's laudanum may be added with advantage. The bromide acts as an anæsthetic to the mucous membrane, as a caustic to excoriations, and through its effect on the general nervous system. It quiets immediately the urticaria of dentition, and under its influence those excessively nervous children in whom the eruption of the teeth is irregular and difficult, pass through this period without convulsive phenomena. M. Peyraud has also used it with success in caries of the teeth and of some of the long bones, and in diphtheria. Carious teeth he fills with powdered bromide, which is retained in its place by a tampon of cotton; the first application calms the pain in about twenty minutes, and the tooth gradually becomes insensible. In caries of the long bones the fistulæ are washed out with a solution of the bromide in glycerine and water. Diphtheritic membranes are powdered with the finely pulverised salt, every two, three, or four hours, according to the severity of the case. A cure results in from twenty-four hours to five days, the average being about three to four days.—*Journal de Médecine*, August, and *N. Y. Med. Record*, October 4, 1879.

MILK DIET IN CHRONIC CYSTITIS.

M. TEEVAN (*La France Médicale*, Août 14, 1879, and *Lond. Med. Record*, Oct. 15, 1879) relates a case of chronic cystitis which he treated by an exclusive milk diet. An enema having been first administered, the patient took a pint of milk every two hours. The urine soon presented the appearance of a mixture of mucus and pus, and the patient vomited clots of coagulated milk. In a short time the vomitings became more frequent, but the urine became quite clear, and the patient left the hospital in perfect health after continuing this treatment for about a fortnight. In commenting on this fact, M. Teevan remarks that he

obtained very good results from the same treatment in soothing the irritation which is caused by the operation for lithotrity. The effects of an exclusive milk diet on the urinary organs and the secretions of urine are well known in cases of incontinence of urine in children. This disease is often cured simply by not giving them any meat, and restricting them to a milk diet. If the latter should not be found sufficiently nourishing, a combined milk and fish diet will be found very useful.

HYDROPHOBIC TETANUS.

An interesting case of hydrophobic tetanus is reported by Dr. Kirchhoff. The patient, a woman aged fifty-two, happened to fall on her face into some briars. Several of the thorns penetrated her face, but were immediately drawn out by another woman who happened to be with her. In the course of the week following the accident, the patient's face was much swollen; then she found it impossible to open her mouth; both deglutition and respiration were much impaired. On the seventh day she fell into convulsions; on the eighth day the left facial nerve had become paralysed. When first seen in the hospital, she was in a half-sitting, half-crouching position, clutching at her lower lip, and trying to pull it down with both hands. A stream of saliva ran out of the mouth, had macerated the epidermis of the finger tips, and soaked her clothing. Respiration was frequent, the inspiration was not hindered, but every expiration was followed by a short groan, while at the same time a perfect shower of saliva came out of her mouth. Simultaneously her back became more arched, and the head and thorax were slightly turned to the right. The right eye was closed, the left only partially so; the right corner of the mouth was higher than the left, and was drawn towards the right. The pupils were alike, and narrow; they reacted to light, and moved normally. On keeping the mouth forcibly open, inspiratory raising of the velum of the palate could be seen. In the left temporal region was a small abscess, which, on being touched, evoked strong tetanic convulsions of the thorax. At the same time the face was drawn more towards the right. The patient was put under chloroform, and an incision made in the wound, whereupon a thorn three centimetres long was extracted. The patient was offered some water to drink, at the mere sight of which she seemed to be filled with horror. It was impossible to make her swallow some with a spoon. The opisthotonos became worse, the head was distinctly drawn backwards. The extremities did not take part in the convulsions. The urine contained albumen. The faradic contractility of the muscles of the left side of the face had not been destroyed; it was, however, much weakened when the stimulus was applied to that portion of the facial nerve which runs out of the stylo-mastoid foramen. This proved that the paralysis was of peripheric origin. The patient was very cyanotic; her pulse was small and frequent.

A systolic blowing murmur could be heard at the apex of the heart. The left trifacial nerve was not affected, as was seen by pricking the patient's face with a needle, for the right half contracted with an evident expression of pain. The patient was treated with large doses of bromide of potassium and chloral hydrate. She died on the second day of her stay in the hospital. Two hours before her death the temperature was 101·2°; ten minutes after death, 104° in the vagina. It is noteworthy that the patient had never been bitten by a dog. At the *post mortem* examination a cyst of the size of a pea was found in the left corpus striatum; below it was a small grayish focus. The pons and medulla were soft, and dotted with pink spots, but apparently normal. The spinal cord was in the same condition. On examining it with the microscope, very numerous corpora amylacea were found in the brain and cord. The thoracic and abdominal viscera did not present any remarkable changes. The left facial nerve was microscopically examined, but no pathological alterations could be detected in it. Reflections:—It was very difficult in this case to make a correct diagnosis at once, as many of the symptoms—*e.g.*, the unilateral paralysis of the facial nerve, the impossibility to swallow, the convulsions and expression of terror at the sight of fluid, and the restlessness of the patient—seemed all to point more towards hydrophobia. At the same time, the opisthotonos, the contraction of the abdominal and masseter muscles, all betoken tetanus, as well as the convulsions which were synchronous with the expiration. It seems that Rose has been the only one to notice this peculiar form of tetanus. He has also given it the name of hydrophobic tetanus. Dr. Kirchhoff supposes that in this case the tetanus was owing to a pressure on, or injury of, the facial nerve, and that the tetanus was merely a reflex act.—*Berl. klin. Woch.*, 1879, No. 25, and *Lond. Med. Record*, October 15, 1879.

SHORT DIRECTIONS FOR LISTER'S DRESSING.

In some of the American hospitals the directions for carrying out Lister's treatment are thus conveniently and tersely stated:—*a.* Before and during operation.—(1) Carbolic acid spray. Steam passing through a solution of 1 part of carbolic acid in 30 parts of water. As it issues from the jet, the solution contains about 1 part of acid in 40 of water. (2) Sponges, hands of operators, &c., dipped in solution of carbolic acid (1 in 20). (3) Instruments covered with oil, containing one-tenth part carbolic acid; some are dipped into or kept in watery solution (1 in 20). (4) During intermission of spray the wound is covered with a cloth dipped in carbolic acid solution (1 in 20). *b.* After operation.—(1) A strip of lint soaked in an oily solution of carbolic acid (1 in 10), or a pure rubber drainage tube, similarly treated, is left hanging from the wound during the first and, if necessary, following days. Either of them is

cut off flush with the edge of the wound. (2) Over this is placed the protective, into which a small hole is cut, corresponding with the end of the drainage tube. The protective consists of a layer of oiled silk, coated on both sides with copal varnish, and afterwards brushed over with dextrin, which latter enables it to become uniformly moistened when dipped into solution of carbolic acid (1 in 40). It is thus immersed just before being laid upon the wound, and is intended to prevent irritation, which would be caused by the actual contact of the antiseptic dressing with the wound. (3) Two or three layers of gauze dipped in a watery solution of carbolic acid (1 in 40) are next applied. Then (4) seven layers of the antiseptic gauze, being a cotton fabric of open texture impregnated with a mixture of 5 parts resin, 7 parts paraffin, and 1 part carbolic acid. (5) Over this is applied the mackintosh, which is about 1 inch less in size than the gauze. (6) Then another layer of antiseptic gauze is applied; and, finally (7), carbolised bandages, sufficient to retain the dressings, &c.—*Lond. Med. Record*, October 15, 1879.

SURGICAL OPERATIONS ON THE KIDNEYS.

At the conclusion of a recital of a number of operations on the kidneys, Dr. L. S. Pilcher formulates the following propositions as abundantly proven:—(1) Incisions into the substance of a kidney are not in themselves especially dangerous. (2) The kidneys may recover from very considerable lesions, if complications can be averted. (3) Anatomically, the exposure or the removal of a kidney is not especially difficult or dangerous. (4) A single healthy kidney is capable of eliminating sufficient urine for the maintenance of health. These four propositions being accepted, two conclusions logically follow. These Dr. Pilcher submits with a confident belief that they will in time become generally accepted as rules of surgical practice:—I. Incisions into the substance of the kidneys for the exit of retained fluids, or solid concretions, or foreign bodies which have entered from without, or for purposes of exploration, are justifiable. II. When a reasonable certainty exists that one kidney is healthy, and the other is the seat of advanced and irremediable disease, its extirpation is justifiable.—*Lond. Med. Record*, October 15, 1879.

PURPURA HÆMORRHAGICA TREATED WITH ASTRINGENTS AND FARADISATION.

Dr. Shand has lately treated a case of purpura hæmorrhagica occurring in a girl aged eight years with astringents. The usual remedies of dilute aqua-regia, quinine, aloes, oranges, and cod-liver oil having failed, he altered the treatment to the liquid extract of ergot, one drachm and a half; tannic acid, twenty grains; glycerin, half an ounce; syrup of oranges, half an ounce—to two ounces of water; a teaspoonful given every hour whilst the bleeding continued. Camphorated oil was applied

over the area of the affected lung, and where the latter was applied there was a corresponding mass of ecchymosis produced, on account of which simple fomentations were afterwards employed. As the patient still grew worse, a one-grain morphia suppository was given, and the interrupted current was applied, running over the whole surface of the body by means of sponges. This was repeated every two hours, till the motions ceased; as griping occurred a piece of soap was injected, which produced two evacuations: the first consisting of blood, the second nearly normal. Next day the patient was much improved and the bleeding had almost entirely ceased. "Bisulphate of quinine, eight grains; dilute sulphuric acid, ♏. xv.; sulphate of iron, grs. xij.; syrup of oranges, ℥½; water to ℥ij.; a teaspoonful as directed" was then prescribed. The patient made a good recovery and since then has enjoyed good health.—*The Lancet*, July 19, 1879, and *Practitioner*, Oct., 1879.

A RARE CAUSE OF ŒDEMA.

Under this heading Dr. Hess reports the following case:—A retired merchant, fifty-six years old, who is suffering from a very slight paralysis of the legs and occasional failing of memory, for which he had been attended from time to time, sent for Dr. Hess on account of symptoms of dropsy. When first seen his legs were found to be nearly double their natural size, the skin of the abdomen being œdematous up to the umbilicus, and the abdomen itself occupied by a large tumour, extending in the median line from the symphysis to the pit of the stomach. The whole of the pelvis was filled by a tense tumour, which fluctuated on pressure from above. The patient did not complain of any scarcity of urine. A catheter was sent for, and nine pints of clear acid urine were withdrawn. For a few days the bladder filled again to some extent; but the œdema began to diminish, and was gone at the end of the week. The daily introduction of the catheter and faradisation; iron and nux vomica internally; injections of permanganate of potash while the urine was offensive and alkaline, as it turned immediately after the first catheterisation, have restored the bladder to its normal condition.—*The British Med. Journ.*, July 26, 1879, and *Practitioner*, Oct., 1879.

VAGINISMUS.

M. Gallard, in the *Annales de Gynécologie*, states that he constantly recommends the gradual dilatation of the vagina by tents of progressively increasing size. According to the circumstances of the case he impregnates these tents with different applications. He also believes that these topical applications aid materially in curing vaginismus. For this purpose M. Gallard recommends the use of iodoform made up into an ointment (iodoform, 2 grams, cocoa butter, 2 grams, fresh lard, 15 grams). This preparation may be employed when there is redness or excoriation

of the mucous membrane. If there is only pain without any visible change in the mucous membrane, extract of belladonna, 2 grams, fresh lard, 15 grams, may be prescribed. In this, as in the previous case, the tents may be as small as possible. After the employment of the iodoform ointment it is well to replace it after a few days, when the redness and excoriations have disappeared, by the belladonna preparation. In both cases care should be taken to increase daily, by an imperceptible but still advancing gradation, the size of the tent. By this means, at no very distant period, a tent is habitually employed which is of such a size as to allow the introduction of the male organ. In effecting this result the action of the narcotic substance and the progressive dilatation have both materially assisted each other.—*Journ. de Méd. et de Chir.*, May, 1879, and *Practitioner*, Oct., 1879.

BRITISH MEDICAL ASSOCIATION.

The following is a list of grants in aid of Scientific Investigation which have been made by the British Medical Association for the year 1879–80:—Dr. Ogston, for the research into the relation between bacteria and surgical diseases, £50. Mr. W. North, to discover what, if any, relation exists between the nitrogenous egesta and muscular work, £50. Dr. Ewart, to continue his research into the life-history and pathological relations of specific organisms already known, and for the discovery of other similar organisms and the channels through which they enter the system, £10. Dr. Crocker, to continue his research on the physiological action of alcohol, with especial reference to its mode of elimination, £24 5s. Dr. Thin, to continue his research into the nature and development of conditions of life of the vegetable and animal parasites that infest the human skin, £5. Mr. Chiene, to continue his research on the subjects—(1) Are there present in organs of living animals particles which originate the bacteria met with after death? (2) Do the discharges from wounds which are antiseptically treated contain organisms? £15. Dr. Barlow, to continue an experimental investigation into the changes produced in the blood-vessels by alcohol, £8. Dr. Ferrier and Dr. Gerald Yeo, researches with the view of testing the application of antiseptic surgery in cases of lesion of the skull, brain, and its membranes, £50. Dr. Newman, research on the functions of the kidney and on the physical conditions which regulate the flow of urine, £10. Mr. Malcolm Morris, an investigation into the anatomical characters of certain diseases of the skin allied to tubercular, scrofulous, typhoid, and syphilitic affections, £10. Dr. M'Kendrick, investigation on anæsthetics, £50. Total, £282 5s.

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DECEMBER 1, 1879.

PART I.

ORIGINAL COMMUNICATIONS.

ART. XIV.—*On a Case of External Urethrotomy by Wheelhouse's Method.* By WILLIAM THOMSON, F.R.C.S.; Surgeon to the Richmond Hospital; Member of the Surgical Court of Examiners, Royal College of Surgeons, Ireland.

IN June last a young man, D. H., was admitted to the Richmond Hospital under my care, on the recommendation of my friend, Mr. Edward Thompson, surgeon to the Omagh Infirmary. He had been suffering from a severe traumatic stricture for over two years, and at the time of his admission he was in a very miserable plight. For a considerable time he had only been able to pass water in drops. There was constant stillicidium, so that his clothes were always saturated with urine, and he was unfit to do any work. He had walked from Omagh in the hope of obtaining admission and relief. Dr. Thompson was good enough to send me the following history:—"For two years he has been suffering from incontinence of urine, the result of an injury to the perinæum by a kick. About two months ago he first came under my notice. He had been drinking heavily, and had got into a squabble with two or three other lads. He was thrown to the ground, and when in this position was kicked several times in the perinæum. On his admission to hospital he was suffering great pain. The perinæum was slightly discoloured; there was considerable swelling of the urethra in this

situation, and great pain on pressure. The urine was dribbling away, and caused severe scalding. The patient was put to bed after getting a warm hip bath, and a hot linseed-meal poultice was applied to the perinæum. He was put on a milk diet, and ordered plenty of demulcent drinks. For a few days he seemed to be getting on nicely, but on the fourth day violent rigors supervened, and any attempt to pass urine caused the most excruciating agony. The swelling of the perinæum remained about the same as on admission, but the discoloration of the integument had greatly increased. The patient was put into a warm bath, but when he returned to bed the symptoms became much more aggravated. Rigor followed rigor, the extremities became cold, the colour of the skin generally was changed to a dirty yellow, and the pulse at the wrist entirely failed. The stomach was very irritable, and almost any food caused vomiting. The bowels were frequently moved, the evacuations consisting of thin whitish matter, like whey. So serious did the case appear that the patient's dying deposition was taken. For three or four days there was no improvement, the patient living almost entirely on brandy and milk, with large doses of opium as medicine. The swelling in the perinæum increased, the pain then lessened, and there was an appearance of returning strength. An abscess formed and was opened, and from that day the patient rallied quickly. On several occasions, when the acute symptoms subsided, I attempted to pass a catheter, but always ineffectually. Seeing that there was little hope of doing much more for the poor fellow here, I recommended him to go to you in Dublin."

An external examination of the perinæum revealed the position of the stricture. A scar of an abscess remained, and there was a thick fibrous cord running in the course of the urethra for about an inch. An exploration of the canal corroborated this. I then endeavoured to reach the bladder through the stricture, and after a tedious but careful trial I failed. On this occasion, and on several others, I used a great variety of instruments, including caoutchouc and whalebone filiform bougies, which had served me well in other difficulties, but I could not find the narrow opening, and, on consultation with my colleagues, I determined to divide the stricture from the perinæum. In the *Dublin Journal of Medical Science* for December, 1876, p. 489, in my Half-yearly Report on Surgery, I had drawn attention to an operation devised for such cases by Mr. Wheelhouse, the distinguished surgeon, of Leeds. He had

had much testimony in its favour, and I thought the proceeding so hopeful, and had seen such good results from it in a case subsequently operated on by Mr. Thornley Stoker, that I determined to adopt it. The details of the operation, as given by the author, are to be found in the *British Medical Journal*, 1869–70, and June 24, 1876, and in part in this Journal, as mentioned.

The instruments required are—a special staff, an ordinary scalpel, two pairs of straight-bladed forceps, nibbed at the points, a well-grooved probe-pointed director, Teale's probe gorget, a straight probe-pointed bistoury, and a short silver catheter with elastic tube attached.

The patient, who suffered much from occasional rigors, was prepared for the operation by a course of tonic treatment, in which quinine was predominant. Having been brought into the theatre, he was placed in the lithotomy position, and secured as for that operation. I now introduced the staff figured below.

Fig. 1.—Wheelhouse's Staff.

This staff, it will be seen, is grooved upon one side to within half an inch of the end, and the extremity is a button-like hook, which projects very slightly on the opposite side. The instrument was introduced with the groove towards the perinæal surface, and was pressed firmly but gently against the stricture. It could be easily felt through the soft parts, and a few incisions only were necessary to reach the urethra. Then I passed the point of the knife into the groove, dividing the healthy part of the canal for about an inch. Care must be taken that the incision is made in the groove only, and not upon the point, "so as certainly to secure a quarter of an inch of healthy tube immediately in front of the stricture." This having been done, the edges of the urethral flaps were seized by forceps and held aside. The next step was to change the position of the staff. It was slowly withdrawn, until its extremity appeared through the wound. It was then turned completely round, so that the button-like hook looked towards me, and the groove towards the pubes. Continuing the withdrawal, the "hook" caught in the upper edge of the wound, in the urethra. Thus the parts were held open at three points, as shown on next page.

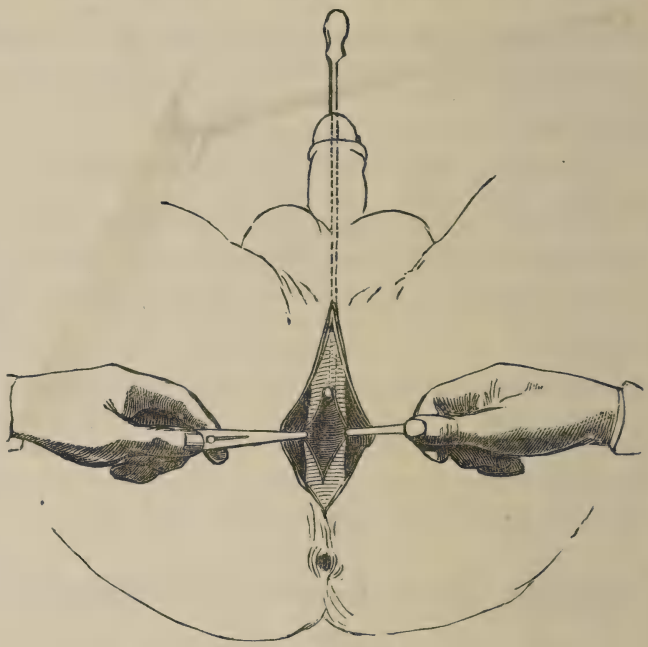

Fig. 2.—Shows the wound held open.

We were now face to face with the stricture, looking from healthy to diseased urethra. Here began the difficulty of the operation, for I had to find the opening, which undoubtedly existed. There were no granulations in front of the stricture; but it looked a dense wall, through which we were not likely to find a passage. Taking the director, I made a prolonged search with it for the opening, and I was delighted to find it at last. The instrument was, however, too large, and was passed in with difficulty. By carefully dividing the cicatricial tissue upon it, I succeeded in reaching the bladder, although this proceeding took a good deal of time. Then the director was turned, so that the groove was turned towards the anus. Passing a knife along the groove, the whole stricture was completely divided, and the urine escaped with a gush. The next step was to introduce a catheter—always a great difficulty with perinæal operations. To effect this the probe point of Teale's gorget (Fig. 3) was introduced into the groove of the director and gently pushed along this into the bladder. The director was then removed, and we had an unyielding channel along which we could pass a catheter. A gum-elastic instrument was introduced through the meatus, and, reaching the gorget (Fig. 4), was conducted by it into the bladder.

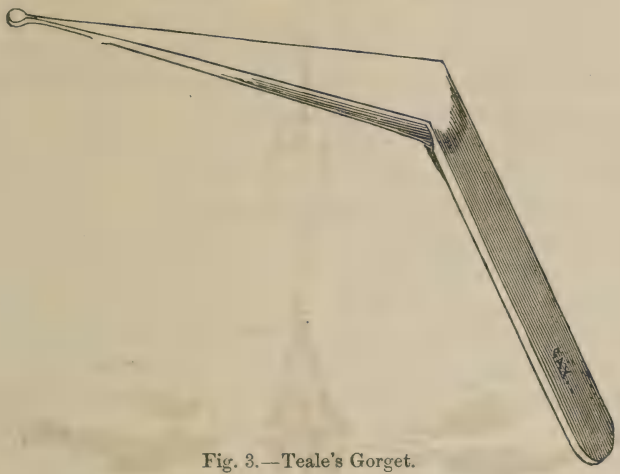

Fig. 3.—Teale's Gorget.

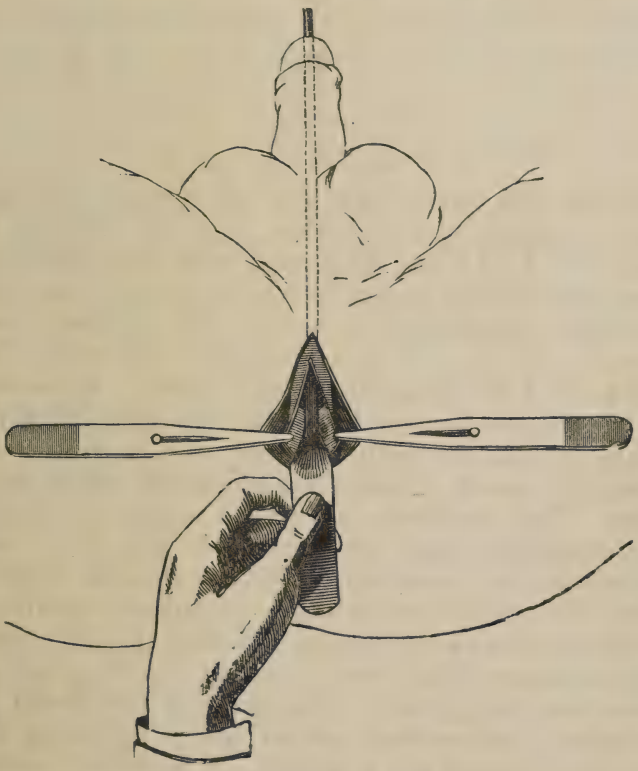

Fig. 4.—Gorget introduced.

The patient was removed to bed, and the urine was allowed to drain away through an India-rubber tube. He quickly rallied from the operation. His evening temperature was 99·8°—the highest range reached—falling next morning to 98·4°.

On the fourth day I removed the catheter, and for some days afterwards I passed a silver instrument every morning. The wound gradually closed, and had quite healed in about three weeks. No bad symptom supervened. The patient's bladder slowly recovered its tone, and he was able to retain water for four hours, when he left hospital, exactly two months after his admission. He had been up for a month, but I kept him in hospital in order to observe if there was any tendency of the stricture to return. When the catheter was not used for a week this tendency developed, but when he left the canal easily admitted a No. 12 catheter, and I impressed on him the need of having an instrument passed at short intervals.

This was a very aggravated case of impassable traumatic stricture. Two distinct injuries in the same region, some years of neglect of treatment, and an intemperate life, had combined to form a most unfavourable case for remedial measures. Of course the fact that I could not enter the opening in the stricture with a bougie of any size rendered internal treatment out of the question, and the only resource was an external urethrotomy. In these days of internal incision, opening the urethra in the perinæum is not often practised. Sir Henry Thompson believes the necessity for it to be extremely rare, but even that much-experienced operator has met with three cases—two of them traumatic—in which he had to divide the urethra externally through the perinæum.

The great desideratum in perinæal incision has been to get a guide for division of the obstruction. To cut down upon the point of a staff in front of a stricture, and then to try to carve a new channel through a mass of cicatricial tissue, is an unsatisfactory, not to say most dangerous, proceeding. There is no stricture without an opening, if we can only find it; and that being so it would be better to adopt the plan of Vidal or Demarquay, who divide the prostatic or membranous part of the urethra, and then seek to pass an instrument from behind forwards through the strictured canal. But that is a formidable operation, and one which ought to be unnecessary in these times. The effort to provide a guide for division of the stricture from before backwards has been made by Van Buren, of New York, with some success; and his

suggestions have been further carried out by Gouley of the same city. But I do not know any plan which offers so many facilities to the surgeon in these cases as Wheelhouse's method. The part upon which we wish to operate is fully exposed, and we can perform any necessary manipulations at the very seat of the obstruction. Sometimes it will be found that the opening is so small that an ordinary director will not pass, but even then a filiform bougie may serve as a guide, alongside of which careful incisions can be made until a wider part of the canal is reached and admission given to the director.

An important feature in the operation is the certainty with which a catheter may be introduced through the penis and into the bladder by the plan practised by Mr. Wheelhouse. The gorget forms a firm floor, which serves to conduct the instrument to its destination with much facility. Without such an arrangement the end of the catheter would almost inevitably hitch upon the lip of the wound in the deeper part of the urethra, and seriously complicate the operation. I have seen this difficulty occur always in other perinæal operations, including Syme's; but it is important to know that where that method is thought necessary, the gorget can be passed along the groove of the staff into the bladder, as well as along a grooved probe.

The propriety of introducing a catheter at all after perinæal urethrotomy is questioned by Van Buren. A catheter was always passed by Syme, who left it in for forty-eight hours, and Wheelhouse recommends that it should be allowed to remain for three or four days. Van Buren's experience is that the instrument gave rise to irritation, ulceration, and to more than one fatal result. "I subsequently," he says, "searched out and tabulated all the recorded cases of perinæal section in the books of the New York Hospital from its foundation, and found that a majority of the patients left the institution with unclosed perinæal fistulæ after wearing a catheter from one to six months, instances of their returning to the hospital within a year to seek relief from relapsing urinary obstruction being not infrequent. Influenced by this experience, I took the responsibility of deviating from the usual practice, and left no catheter in the bladder after operating by the perinæal section."[a] The determination was come to upon a practice which had nothing to recommend it. It is not strange that such unfortunate results should occur to a majority of patients who had worn a catheter for

[a] Genito-Urinary Organs. P. 127.

from one to six months. But I cannot approve of Van Buren's alternative, that we are not to leave a catheter in the urethra at all, but rather to introduce one daily. A catheter allowed to remain in for two or three days gives time for the inflamed urethra to shape itself around it, just as a tracheotomy wound is firmly shaped around the tube after twenty-four hours. Subsequently the catheter can be passed with comparative ease; but knowing the difficulty of doing so without a guide, even at the time of operation, I cannot but think that the greatest mischief may be done by the endeavour to get the instrument into the deeper opening in the urethra, day after day, where no preparative fixity has been given to the tube by the means advocated.

I have to acknowledge the courtesy of Mr. Wheelhouse, who has kindly furnished me with the original woodcuts to illustrate the steps of his ingenious operation.

ART. XV.—*Surgical Contributions.* By JOHN FAGAN, F.R.C.S.I.; Surgeon to the Belfast Royal Hospital, and the Belfast Hospital for Sick Children.

I.—ANTISEPTIC OSTEOTOMY IN THE UPPER THIRD OF FEMUR. II.—OVARIOTOMY.

THE subject of osteotomy, both subcutaneous and antiseptic, is one that is engaging the attention of surgeons a good deal at the present time. It is more with the view of confirming the advantages attending one method of operating than of communicating anything new that I report the history of the following case, illustrated by photographs, which convey a very accurate notion of the condition of the patient, both before and after operation:—

CASE I.—*Antiseptic Osteotomy in the Upper End of Femur.*—A. B., aged nine years, a fairly healthy little girl, and the child of healthy parents, was placed under my care in May last. She was the subject of deformity following hip disease. The right limb was flexed and ankylosed at an angle of about 130° when standing in an easy position, as seen in the photograph, but it approached very near the right angle when the lumbar curve was got rid of by elevating the limb. There was perfect bony ankylosis. The head and neck of the femur were removed by absorption, and the great trochanter was in close contact with the upper lip of the acetabulum. The whole limb was much wasted, and was from two and a half to three inches shorter than its fellow. On the 10th May, after having placed the child fully under

ANTISEPTIC OSTEOTOMY, BY JOHN FAGAN, F.R.C.S.I.

the influence of ether, I operated as follows with all the necessary antiseptic precautions:—Placing the patient on her left side I made an incision in the vertical axis of the limb, one inch and a half long, down to the bone on the outer aspect of the thigh, a little below the great trochanter. A small artery spouted, which I secured by torsion. I then made an almost complete section of the bone with chisel and mallet, cutting from above and without downwards and inwards, and without much difficulty fractured the uncut portion. I now tried to straighten the limb, but found certain fascial and muscular structures resisting. Having divided the tendon of the adductor longus, and the fascia lata overlying the origin of the tensor femoris and sartorius with some of their fibres, I succeeded in getting the limb into the straight position. After applying a broad strip of adhesive plaster on either side of the limb, extending from the middle of the thigh to six inches below the foot, and having dressed the wound after Lister's plan, I put on a long bracketed splint, and kept up extension by a weight attached to a stirrup made by joining the two pieces of plaster below the foot.

During the progress of the case the child's pulse and temperature never exceeded the normal state; she suffered no pain whatever, and slept and took her food as usual. On the fourteenth day after operation I looked at the wound for the first time, and found it perfectly united without the formation of a single drop of pus.

At the end of six weeks the limb was put up in an immovable splint, and she was allowed to get about on crutches. In two months she was able to walk a little with the aid of a stick, and a short time afterwards the accompanying photograph was taken, which conveys a very accurate notion of her condition.

The removal of ovarian cysts—an operation of frequent occurrence in the sister countries—is a comparatively rare one in Ireland, and unfortunately its performance here has not been attended with the happiest results. The present case, the history of which I am about to narrate, is the third in which the operation of ovariotomy has been successfully performed in the North of Ireland.

Case II.—*Ovariotomy.*—Jane Orr, a native of Ballyclair, aged forty, married, mother of seven children, in March of 1878 began to experience pain in the abdomen, and noticed a slight swelling in the left side, which steadily increased in size till August of same year, when she was admitted to the Royal Hospital under my care and had the cyst tapped. I urged her to come back to hospital in case the swelling reappeared, with the view to performing an operation. Like most patients similarly affected, she would not at first entertain the idea of submitting to

operation. She was twice tapped by the dispensary medical man. When the fluid began to accumulate after the third tapping she was induced to come to hospital again for treatment. Her condition on admission was as follows:—She has a worn, pinched appearance; is very helpless; gets very little sleep, which she takes in the sitting posture; the appetite fairly good; limbs slightly swollen; condition of urine normal.

The abdomen was round, smooth, and very prominent, with large veins ramifying over it. The percussion wave was most distinct on the slightest touch, and perceptible over nearly the whole abdominal area. Dulness was general except for a very limited extent in the right flank, and there was a sense of extra fulness and induration in the left.

Measurements of abdomen as follows:—

From ensiform cartilage to umbilicus - -	10½ inches.
„ umbilicus to pubis - - -	12 „
„ „ to ant. sup. spine of ilium -	14 „
Girth round at level of navel - - -	42½ „

After the necessary preparation of the patient and her surroundings, I removed the tumour antiseptically on the 1st July. My incision extended from about two and a half inches below the umbilicus to within two inches of the pubes. The cyst was but slightly adherent to the abdominal wall; the adhesions, however, between it and the great omentum were pretty firm and extensive. These I partially removed by the hand, and the remaining portion, which was more firmly attached, I separated into two parts, tying each with carbolised catgut ligatures at two points and dividing between. The cyst, after being emptied of its fluid contents in the usual manner, was without much difficulty drawn out; not a drop of the fluid was allowed to enter the abdominal cavity. As the pedicle was short I resolved on ligaturing and returning it. This I did as follows:—I passed through it an aneurism needle armed with a double fine silk ligature. The needle was then withdrawn, and the ligature cut in two. After crossing the threads in figure of 8 fashion, I tied one half as tightly as possible, while my assistant tied the other in a similar way at the same time. We then exchanged ligatures, so as to embrace the whole pedicle, and firmly tied both halves together. I then severed the pedicle about an inch on the distal side of the ligature, and finding no hæmorrhage from its open-mouthed vessels, the ligatures were cut short, and the whole dropped into the cavity of the pelvis. There was some oozing from the torn surfaces, but it was not considerable, and was carefully removed from the pelvic cavity by warm sponges. One vessel in the abdominal wall near the lower angle of the wound required ligature, and a number of small vessels were secured by torsion. The wound was closed by five points of double wire suture; a pad of lint, saturated in a solution of carbolic acid and glycerine (1 to 6), was placed

over it, over this several folds of carbolised gauze, and then a large pad of carbolised tow, and round all a wide flannel roller. She was comfortably placed in bed a little within the hour after the commencement of the operation.

A hypodermic injection of $\frac{1}{4}$ gr. of morphia was administered. She had some green tea to drink, a little ice to suck, and an ice cap was applied to the head.

12 o'clock, night.—Temperature 101·2°; pulse 112. She vomited five or six times, a few mouthfuls on each occasion. She had a hypodermic injection of morphia, and the catheter was twice used.

For the first few days she went on well; on the third and fourth she vomited several times, and there was some tympany. I stopped all food by the mouth, and administered nutritive enemata instead. I allowed her one oz. champagne every third hour. The hypodermic injections of morphia were still administered at intervals, and the catheter used regularly. Her temperature never exceeded 102° or the pulse 130.

On the sixth day the wound was dressed under the steam spray. It looked healthy; there was no discharge.

On the seventh day she had a free natural motion from the bowels.

On the tenth day the sutures were removed, the wound being quite healed. Her diet at this time consisted of gruel, beef-tea, and champagne. Temperature 99°; pulse 90.

On the fourteenth day, when dressing the case, I noticed a circumscribed, indurated, tender spot, about the area of a crown piece, at the lower angle of the wound. She complained of great pain about this part, and from the previous day did not feel so well—her temperature going up to 101° and pulse 110.

Next day there was a free discharge of very fœtid matter, followed by great relief to the patient, and a lowering of pulse and temperature. The sore healed in a few days.

Three weeks after the operation the patient was sitting up in bed, the wound was quite healed, and there was scarcely a trace of tenderness over the abdomen; she was sleeping and eating well, and felt happy and hopeful.

A short time after this she was able to be about the ward, and when leaving hospital expressed herself as feeling quite as strong and healthy as ever she was.

The tumour, which consisted of a solid portion and a unilocular cyst, when emptied of its fluid contents, weighed 6 lbs., and the cyst contained 30 pints of fluid.

In reviewing this ordinary case, there is nothing striking in its general features calling for special comment. It was a favourable case for operation, and its progress and termination were all that

could be desired. I may, however, draw attention to a few points in connexion with it that somewhat forcibly impressed me.

First, as regards the immediate after-treatment of the patient—I am disposed to think it is a mistake, as a general rule, to administer any food by the mouth for the first twelve hours, or for a longer period if it gives rise to vomiting. What usually occurs is as follows:—Milk more or less is taken; the patient, after a little, gets sick, and vomits it; more milk is taken with a like result; tympany and hiccough are apt to supervene, and the consequence is that not alone does the patient gain no nourishment or strength, but is actually rendered more prostrate, while there is interference with that absolute rest for the wounded parts which is of such vital importance immediately following so serious an operation.

The following appears to me to be the more rational mode of treatment, especially in sthenic cases:—Enjoin absolute rest for the first twelve hours; this cannot be done more effectually than by the repeated administration of hypodermic injections of morphia, and the withholding of food. If there is any sense of prostration, it may be relieved by small and repeated quantities of iced champagne or other suitable stimulant. After the first twelve hours small nutritive enemata may be administered, and at the end of the first day the tolerance of the stomach may be tested by the careful administration of very small quantities of beef-tea, gruel, or milk and lime-water, according to the taste of the patient. If the stomach rejects these, it should be let alone, and the enemata substituted, till it could tolerate food.

I mentioned that an abscess formed at the lower angle of the wound. I do not believe it had any connexion with the abdominal cavity. It was superficial, and I attribute it to the ligature I put on the divided vessel in the wall of the abdomen, which acted as a foreign body, giving rise to the train of symptoms described. I think the application of a ligature in the abdominal wall should be avoided if possible; and I believe the bleeding vessels can be effectually secured by means of torsion, or by catching them in a bulldog forceps till after the operation is completed, and then passing the sutures that are to bring the edges of the wound together through them, as we do in operations for hare-lip.

The last point I will notice is the treatment of the pedicle. This is a very fruitful field for discussion, and the advocates of the various ways of treating it have each a great deal to say and a great deal to show in support of his peculiar method. It is not my

intention to advocate one means of treatment more than another, but I will simply state what I did in this particular case, and why I did it. The pedicle was not long enough, I believed, for the application of the clamp, and consequently I used the ligature. When the ligature is used, we know there are certain things to be dreaded—viz., slipping of the ligature, and consequent hæmorrhage, sloughing of the pedicle, and puncturing a vein when the pedicle has to be tied in halves, or a subsequent separation of the halves, which often gives rise to secondary hæmorrhage by the tearing of a vein. Many surgeons recommend that the pedicle be tied with a thick ligature of silk or carbolised catgut, and not too tightly. In this way they say the circulation in the stump is not obstructed, and the chance of sloughing removed. This may be so, but the danger from slipping of ligature and secondary hæmorrhage is very great, and fatal cases resulting from such an accident have been reported. In order to avoid puncturing a vein, I used an aneurism, instead of a Liston's, needle for carrying the ligature, and having first made a very small opening with the point of a scalpel in the peritoneal covering of the pedicle, it required very little force indeed to make the needle pass through it. I tied the pedicle in two parts with a single fine silk ligature as tightly as possible, and then, after crossing the ligatures, tied the halves closely together. In this manner I guarded against the twofold danger of slipping of the ligature and separation of the halves. When a fine silk ligature is used, sloughing is of rare occurrence; the vitality of the stump is sufficiently provided for (as has been shown by Mr. Thornton) by the capillary circulation in its centre, which is not completely obstructed. Besides, there are other sources from which it derives nutrition. The cut end of the stump is likely to adhere to the neighbouring peritoneum, and thus gets nutriment from it and the peritoneal fluid in which it is bathed; and, again, the fine ligature makes a deep groove in the soft structures of the pedicle, the peritoneum bulges over on either side and comes in contact, adhesion takes place, and superficial vascular connexion is established between the two portions of the pedicle. The presence of the ligature generates a hyperæmic state of the parts, which favours the adhesive process.

ART. XVI.—*Cases of Favus; Specimen of Favus from the Cat, with History of Contagion.*[a] By WALTER G. SMITH, M.D., Dubl.; Fellow and Censor, K.Q.C.P.I.; Physician and Pathologist to the Adelaide Hospital.

OF the different forms of epiphytic disease of the skin, favus is by far the rarest, and except at large hospitals or in special institutions the opportunities for observing it are few and distant. Not only is it rare, but its distribution is curiously very unequal throughout Great Britain and Ireland, as tested by statistics collected in their leading cities; and I may observe that both its rarity and inequality of distribution are difficult to understand from the point of view of those who maintain the pathological identity of favus and common ringworm. Moreover, tinea tonsurans is a pest to the rich and poor alike, whereas few dermatologists have had occasion to treat favus in the upper classes. Mr. Erasmus Wilson, for example, recognised favus twice only among 3,000 private cases. In Scotland Dr. M'Call Anderson met with 160 cases of favus in 11,000 cases of skin disease—*i.e.*, about 1½ per cent. In England it is seldom seen except among the poorest classes, and Dr. Dyce Duckworth estimates its frequency as about 1 in 1,000. In Dublin within the past ten years I have seen 13 cases in a total of about 7,000—*i.e.*, about 1 in 500. The majority of the cases occurred in females—viz., 9 out of 13.

Its favourite locality is (*a*) on the hairy scalp, and it is much more rarely observed on (*b*) the smooth parts of the body,[b] or (*c*) on the nails. As yet I have chanced to meet with but one case of favus engaging the nails (onychomycosis), and four cases of favus limited to the non-hairy parts of the body, and in these latter situations it is fortunately an easy matter to stamp out the disease. Favus is undoubtedly contagious and capable of being inoculated, and nevertheless it is only in a minority of cases that it is possible to trace home the source of infection.

Although the fact of the transmission of the disease from the lower animals, especially the cat, to human beings is tolerably well known, yet the proof of such an occurrence is not often forthcoming,[c] and in one instance alone have I been fortunate enough to

[a] Read before the Medical Society of the King and Queen's College of Physicians, Wednesday, November 5, 1879. [For the discussion on this paper see page 493.]

[b] In the Dubl. Med. Journ., May, 1875, the writer recorded three cases of favus, two of them occurring on the shoulders, the head not being invaded.

[c] Several interesting cases in point are given in Dr. M'Call Anderson's work on the Parasitic Affections of the Skin. 2nd Edit. P. 165.

trace the disease through this channel of contagion, although my attention has been specially directed to this point. I have in my possession and now exhibit to the members portions of the skin of a cat affected with favus which communicated the disease to a young child, and will briefly relate the particulars of the case.

Case I.—In August, 1875, a child, Thomas K., two years of age, was brought by his mother to the Dispensary for Diseases of the Skin, Adelaide Hospital. The boy had a small oval patch on his back about the size of a sixpence, which, it was said, had appeared a week previously as a spot not larger than a pin's head. This had rapidly increased up to its present dimensions, and now presented itself as a dry patch, the centre being the colour of sublimed sulphur and the margin of a lighter shade. Several characteristic circular favus cups were to be seen on the patch. The child was perfectly free from any sign of the disease or other eruption elsewhere, and no one else in the family was affected. Upon questioning the mother as to any source of contagion, it was elicited that a kitten which lived in the same house had a similar eruption. The contagious nature of the affection having been explained to the mother, she was requested to bring the cat for examination at her next visit. She accordingly did so the week following, and upon inspection two dry, white irregular patches were observed on the animal's body. The cat was killed with chloroform, and the affected portions of skin removed. Microscopic examination showed these crusts to be composed of the mycelium and conidia of the Achorion fungus.[a]

At the second visit of the child two other spots similar in appearance were noticed in the neighbourhood of the first. All the spots were cauterised with liquid carbolic acid. On September 2nd no fresh spots had developed, but in the following week a new spot was detected on the right arm. This was likewise cauterised with carbolic acid, and, as the mother ceased to bring the child, it may safely be concluded that no additional spots made their appearance.

Although favus is said to be not uncommon on cats, who contract it from rats and mice, and it is now and then seen on other domesticated animals (dogs, rabbits, canaries, and poultry), and when present its characters are easy of recognition, I have not in any other case been able to prove the communication of the malady through such channels. Fortunately the absence of a history of contagion need not throw doubt upon the diagnosis, and I will conclude this paper by relating some cases in illustration of the sporadic character of this curious disease and of its occasional

[a] *Cf.* Dr. Purser's Paper. Dubl. Quart. Journ. of Med. Science, Aug., 1867.

similarity to the more common forms of tinea that occur upon the body.

Case II.—Bridget S., aged fourteen, came to the Dispensary in November, 1876, and the following notes were taken by Dr. W. M. A. Wright:—For the last seven years she has had a sore head, which her mother states commenced as a little sore on one side, and was attributed at the time to the scratch of a comb, but it continued to grow larger, and gradually spread until it covered the whole head. At the date of her visit numerous dry patches existed on the top of her head, which closer examination showed to consist of yellowish crusts closely adherent to the roots of the hairs. Formerly the disease crept down to the margin of the hair over the forehead, but had retreated from that region. She had no spots or patches of the disease elsewhere on the body. No history of contagion was obtained.

Case III.—In February, 1877, Eva F., aged nine, was brought to the Dispensary by her mother. About a fortnight previously a single large dry patch covered with yellow crusts was noticed in the centre of the child's back. This disappeared in three or four days, and was succeeded by a number of spots, about thirty in all, which appeared symmetrically over both sides of the back. When I saw her the eruption occupied chiefly the neck and dorsal region. One patch occurred on the spine of the third lumbar vertebra, one on the left buttock, and one on the left lumbar region. The patches were tolerably uniform in size, irregularly circular, red and dry, and uniformly scurfy. Only one minute favus cup was detected on the back. There were no spots or patches on the head, and no appearance of ordinary ringworm elsewhere on the body. Neither the father or mother nor any of their six other children have the disease. There is no cat or dog in the house, but the child was in the habit of visiting at a friend's house, where her mother learned there was a cat which used to lie in the bed with the woman and her husband, who have no children. The cat was ill at the time and covered with "sores." The animal since died and was thrown out, so that the opportunity of examining it was lost. Afterwards the woman who owned the cat came to me. She told me that she got a kitten from a neighbour seven weeks ago. The kitten soon sickened and died, and shortly before its death three round scurfy patches about the size of a shilling were observed on the animal's belly. This kitten used to sleep in the bed with the man and his wife, and lie across their shoulders. About a week after the kitten came into the house red spots appeared on the woman's face, arms, and chest, which some of her gossips pronounced to be "ringworm." These spots spread to the back and down the thighs, were very itchy and scurfy, and began soon to exude fluid which stiffened linen, and "blind boils" showed themselves on the arms and back. Her

husband also contracted "round scruffy" patches like ringworm. The spots on the child were touched with caustic, and they seemed to be cured by March 1st. After remaining to all appearance perfectly well for over a fortnight, the mother noticed two fresh spots on the girl—one below the angle of the right scapula, the other half way down the posterior border of the left scapula. Each spot exhibited well-marked favus cups about half an inch in diameter. The "cups" were removed with the point of a knife, and chromic acid (1 in 12) applied to the raw bleeding surface. The patient presented herself for the last time on March 22nd, and appeared to be quite cured. I visited the child's mother this morning (Nov. 5th, 1879), and ascertained that there had been no reappearance of the eruption.

Case IV.—Margaret R., aged twenty-five, came to the Dispensary, 31st May, 1877, and gave the following account of an eruption which appeared on her right arm a few days previously:—On Saturday, 26th May, she felt the right elbow itchy, and rubbed it through the clothes. The itching continuing, she looked at the part and observed a spot about the size of a fourpenny-piece, red and scurfy. There was no oozing nor appearance of any sort of crust, and she thought it must be a ringworm. Next day the spot was larger, the skin more raised, and the itching worse. On Monday minute dry yellow specks appeared in the centre of the patch, which gradually increased in size, and on the succeeding Thursday—*i.e.*, the sixth day—measured one inch and a quarter by seven-eighths of an inch. The edge was raised, discharged a thin, pellucid, sticky fluid, and was bordered by a dry red zone. Occupying the centre of the patch were six or seven small elevations, carrying bright yellow, circular, dry, cupped crusts, which were easily detached, and these left concave, red, glistening little basins, having a tendency to bleed. Cotton wadding was bound on the arm, and she was told to call next day, when it was found that the yellow cups were softened and detached, and that a turbid fluid was freely oozing from the edge of the patch. The redness and itching had lessened. Glycerin of carbolic acid was rubbed in. No other spot developed on any part of the body, and the girl was quite unable to account for the affection. Living in the house with her were ten grown people and six children. None of these were known to have any form of eruption, ringworm or otherwise, and the children were all stripped and carefully examined. The only pets in that house were two cats, neither of which was affected with disease of the skin. One of the cats which especially followed Margaret R. was brought to me. It was chloroformed and examined, and its skin ascertained to be free from disease. On the 5th June chromic acid was applied, and carbolic ointment prescribed. A week later the patch was suppurating slightly, and was very painful. One new suspicious speck was touched with chromic acid, and as the girl did not again present herself it may be inferred that

the disease was cured, for she was quite awake to the imprudence of neglecting it or allowing it to spread.

Case V.—Bridget B., aged fourteen, a girl of small stature, and not developed in proportion to her age, but healthy in other respects, applied at the Dispensary in November, 1878, with favus on the head. All the other members of the family, numbering seven children, are healthy. Two years ago the girl was in hospital for fever, and three months previous to this a slight scurf had appeared on the vertex. After she left hospital the disease spread and gradually reached its present condition. This was as follows:—The whole scalp was thickly covered with characteristic dry yellow crusts, in places diffuse and confluent; in others exhibiting numerous discrete, circular, rimmed cups. On the vertex were several perfectly bald patches, the skin thinned, white, and glistening. Lank dark hairs were sparsely scattered over the scalp, the growth being more developed on the occipital region. On some parts not yet bald thin shrivelled hairs protruded from a red, rough, and slightly corrugated surface. There were no cats in the house at the time the disease commenced, and the mother suspected that the child contracted the disease from a boy who lived in the same street, but the evidence on this point was not conclusive.

It will be observed that in the foregoing cases no mention is made of the local treatment by epilation, and I may add that this arose from no objection to the principle of this rational method or from disbelief in its efficacy, but solely from the difficulty of satisfactorily carrying it out in extern practice. Even if the requisite regular attendance of the patient could be secured, the extraction of the whole of the hair from the scalp in such cases as II. and V. would probably extend over a period of two or three weeks, and would require the services of a careful assistant in order to ensure the success of the treatment.

FATTY DEGENERATION OF THE DIAPHRAGM AS A CAUSE OF INSTANT DEATH.

Frequently persons affected with emphysema, bronchial catarrh, slight degenerations of the myocardium, die suddenly without new complications. At the autopsy are found emphysema, a pulmonitis, bronchial catarrh, hyperæmia of the lungs, some hypertrophy of the heart, with slight fatty degeneration, but nothing sufficient to explain the death. Dr. Zahn has found in similar cases fatty degeneration or thinning of the diaphragm, and maintains that these alterations are sufficient to explain the instantaneous death from asphyxia.—*Virchow's Archiv* and *N. Y. Med. Jour.*, Oct.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

Clinical Medicine: a Systematic Treatise on the Diagnosis and Treatment of Diseases, designed for the use of Students and Practitioners of Medicine. By AUSTIN FLINT, M.D., &c. 1879. Pp. 785.

THIS is the most recent text-book on the subject treated—a portly volume, well got up, with the exception of the usual fault of American books, excessive weight, for which, however, the binder, not the author, is accountable. To give an adequate and useful conspectus of the extensive field of modern Clinical Medicine is a task of no ordinary difficulty; but to accomplish this consistently with brevity and clearness—the different subjects and their several parts receiving the attention which, relatively to their importance, medical opinion claims for them—is still more difficult. This task, we feel bound to say, has been executed with more than partial success by Dr. Flint, whose name is already familiar to students of advanced medicine in this country as that of the author of two works of great merit on special subjects, and of numerous papers exhibiting much originality and extensive research.

Amongst the minor faults of the work now before us—indeed few in number—we may notice a slight excess in subdivision of subjects, which encumbers the memory, and in distinction of varieties which even the matured clinician will find it hard to identify. This straining after conformity to an artificial standard is objectionable in a work treating of Nature's operations, and of these deranged by disease. This fault is especially conspicuous in the account of the various inflammatory affections; every disease whose title ends in *itis* must needs be capable of exhibiting the three degrees of inflammation, acute, subacute, and chronic; and each of these degrees must have a separate etiology, semeiology, and treatment assigned to it. Thus, repetition, involvement, and confusion are made inevitable. Another fault, but one of still less importance—to which, however, we feel bound, on behalf of

our common language, to advert—is one of style. A few American idioms, and these not of the most euphonious, are introduced—*e.g.*, "belongs amongst," for belongs to, or is found amongst. With these exceptions the style is good, and the words chosen are expressive of the author's meaning and well applied.

The work consists of an Introduction and six Sections. Under the former heading subjects of a general character are treated—such as "the facies," "the pulse," "thermometry," "hygienic treatment," "the expectant system," "the professional conduct of physicians," &c. The remarks on the *facies* of disease are, on the whole, good, but not as full as they might have been made—*e.g.*, the apathetic expression of the subjects of visceral cancer is not noticed, nor the *facies gastrica* of organic disease of the stomach in most of its forms. In reference to the pulse the author asserts, to our astonishment, that "a degree of dicrotism sufficient to be appreciated by the touch is a rare symptom." To our appreciation it is, on the contrary, a very common symptom during convalescence from acute disease—*e.g.*, rheumatic fever and pneumonia, and in typhoid fever from an early period of the disease itself. We do not think a period of ten minutes necessary for taking the temperature in the axilla; we have found half that time sufficient for the purpose. The state of the tongue in various diseases is faithfully and graphically sketched—the red and excoriated tongue in anæmia from lactation (*stomatitis materna*), the chalked- or white paint-tongue of intermittent fever, &c. We appreciate the wisdom of the following remarks:—"In order to avoid errors the judgment should be exercised, as far as possible, independently of the sentiments, and the physician will do wisely to study his own mental condition in order to make a fair allowance for the tendencies which may prove sources of error. It is owing to the influence of the feelings upon the judgment that physicians are often incompetent to form correct opinions in diseases affecting themselves, their families, or intimate friends."

Section 1.—Diseases of the Respiratory System. We have always held, and still firmly hold, that increased vocal fremitus should rank amongst the signs of greatest value for the differential diagnosis of pneumonic solidification; but the author states that "it is sometimes increased, sometimes diminished, over the solidified lobe or lobes." This statement, unaccompanied as it is by the qualification that, in the latter contingency, liquid effusion must coexist, is, to say the least, misleading. In reference to the treat-

ment of acute pleurisy we read—"The employment of cold by means of the ice-bag, or cloths dipped in ice-water and renewed at short intervals, has as yet not come into vogue in this country." We are glad to hear it, and we hope it never will. The "abortive" treatment of acute pneumonia by means of large doses of quinine (20 to 40 grains in one dose, or in three or four doses given in the course of a day) is recommended. We have not tried quinine in the maximal single dose here mentioned, nor do we deem it necessary or advisable to resort to so heroic a measure in combating a disease amenable—as sthenic pneumonia in a healthy subject certainly is—to ordinary treatment. That which we prefer, and usually put in practice with results decidedly "abortive"—if rapid and complete resolution within two or three days may be so designated—is cupping or leeching to 4 oz. or 6 oz. at the seat of disease, followed by a warm linseed poultice, and calomel, with Dover's or James' powder, given in small doses (gr. 1 of the former and gr. 2 of the latter) every hour. If diarrhœa occur, as usually happens within the first twelve hours, the medicine may be suspended, and in these circumstances it is rarely necessary to resume it, as already the gums are slightly affected and the disease is in course of resolution. This mode of administering calomel in acute disease is known in Ireland as "Law's method," and deserves the strongest recommendation, whether rapidity of action or the cautious introduction of mercury be contemplated. In this disease we are decidedly adverse to the use of the cold bath as an antipyretic; nor can we, save with reservations which virtually rescind it, approve the rule implied in the following extract from the author:—"The question is, what can the patient be induced to eat? rather than, what articles are allowable? These remarks are not pertinent only to pneumonia; they have a general application." This amounts to the withdrawal of all control over the diet of the sick. We will only ask, is it consonant with our knowledge of the physiology of digestion under the varying circumstances of health and of disease? Is it in accord with the positive results obtained by science from the experiments of the author's own compatriot, Beaumont? This is dangerous doctrine, submitted to the student and young practitioner with all the weight and authority of the eminent professor of Bellevue Medical College, and we deem it our duty to enter our humble but firm protest against it.

In the treatment of whooping-cough a trial of sulphuric ether

inhalation, after the practice of Dr. S. D. Powell, of New York, is suggested. Complete anæsthesia was produced, the ages of the patients varying from two to nine years, and the number of *séances* from one to three. Also the inhalation of nitrite of amyl (1 ♏. to an infant, 2 ♏. to 3 ♏. to a child from three to ten years), as practised by Dr. Bayles. We have had no experience of this treatment of whooping-cough, nor does the author seem to have had.

Under the heading of Chronic Inflammatory Diseases of the Chest two forms of pneumothorax with effusion are mentioned—namely, one with serous and one with purulent effusion. We have not met with an example of the former kind. In every instance that has come under our notice, the liquid associated with free air in the thorax has been in greater or less degree puriform. We demur to the following rule of practice, and question the soundness of the opinion on which it is based, even though stamped by the approval of the author's eminent colleagues:—"If the quantity of liquid effusion be sufficient to dilate the chest and occasion embarrassment of breathing, aspiration should be resorted to *without delay*. Elaterium and other active hydragogues will often diminish the quantity of liquid and afford relief; but their operation is not as prompt as aspiration, and *the latter is certainly quite as innocuous*. The operation is so simple, and so rarely attended with any unpleasant consequences, that at Bellevue Hospital it is now resorted to *as a matter of course* whenever a patient suffers from accumulation of liquid."[a] We grant that aspiration, if well performed, the instrument being perfect and strictly clean, is devoid of danger; but the conditions above mentioned are not always observed, nor, in the nature of things, is it possible they always can be; yet, in default of any of them, the consequences of the procedure may be most serious, as we can testify from repeated personal observation. Irrespectively of this contingent danger, the alarm of most patients at the prospect of an operation still associated in their minds with the evil consequences of former clumsy procedures, is not to be lightly considered. Finally—and this applies with special emphasis to the last paragraph in the preceding extract—patients may get well under ordinary treatment in apparently desperate circumstances. Two such cases are now before the writer's mind. One, a boy of ten years, with liquid effusion in the left pleural cavity, the result of acute pleuritis some weeks previously; dulness was absolute over the whole of the left side,

[a] The italics are ours.

and transgressed the median line; the heart was displaced nearly to the right nipple; the pulse weak and rapid; the surface cold, and dyspnœa so urgent that we deemed it necessary to aspirate without further delay. Fortunately, as it happened, the instrument (Potain's) was out of order and would not work, and the operation was postponed to the following day. Meantime an active purgative was given, and afterwards a diuretic; the hot dry air-bath was likewise used. Next day the boy was so much relieved that operative interference was deemed unnecessary, and, under a continuance of the treatment, dispersion of the liquid and complete recovery were accomplished within a week. At the present time a farmer is under our care in hospital, who was admitted three weeks ago for partial effusion (to one half) on the left side, the result of pleuritis from local injury. When admitted the man was suffering from fever of a hectic type, and great debility. The history of the case and the actual febrile condition led us to conclude that the effusion was purulent, and its removal by operation absolutely necessary. During the few days allowed for the recovery of strength and other preparations for tapping the chest, as there was no special urgency, strong diuretics were given. Improvement commenced immediately, the level of dulness gradually descended, whilst respiratory sounds returned, and the man, though nearly sixty years of age, is about to return home this week perfectly well, save that comparative dulness from thickened pleura and feeble respiration indicate the seat of former effusion. The importance of the subject will plead the writer's excuse for giving the foregoing cases in abstract.

In chronic empyema with fistula the author recommends that the latter shall be kept open by means of tents in preference to drainage tubes (which, as he alleges, are liable to break off within the chest), and the pleural cavity to be washed out once or twice daily with a weak solution of carbolic acid.

The brief notice of pneumonic phthisis is good; the physical signs are succinctly but clearly described. We miss, however, one of much significance in an early stage—namely, subclavian murmur at the acme of inspiration or momentarily in expiration, confined to one side, and associated with other though inconclusive evidence of local deposition.

The treatment of phthisis is briefly but clearly indicated, and among the proposed curative agents arsenic is mentioned. For many years we have been in the habit of prescribing arsenic with a

view to arrest tissue-waste and quicken nutrition in phthisis, and we can strongly recommend it, combined with Parrish's or one of the ferruginous syrups.

Acute miliary tuberculosis, or tuberculous fever, is well sketched, as is also chronic interstitial pneumonia, or fibroid phthisis.

The account of pulmonary emphysema, though condensed, is one of the best articles in the book. Gangrene and cancer of the lungs are fairly well described. "Functional affections of the respiratory organs" are made to include such heterogeneous diseases as hydrothorax, pulmonary œdema, pleurodynia, paralysis of the diaphragm, and bronchial hæmorrhage.

Of acute œdema of the lungs, developed within a few minutes and disappearing completely within twelve hours, in connexion with renal disease, a case in the author's practice is referred to.

In the treatment of asthma, inspiration of compressed air and expiration into rarefied air during the paroxysm is recommended.

Amongst the causes of bronchial hæmorrhage mentioned by the author we do not find scorbutus or the presence of a foreign body in the trachea or bronchi. Of hæmoptysis due to the former of these two causes a very striking example has been witnessed by the writer of this notice. In this case the diagnosis was based upon the actual presence of scorbutic symptoms and the exclusion of the ordinary causes of hæmoptysis.

We cannot endorse the author's recommendation of opiates, either in the crude form or by inhalation, in the treatment of acute laryngitis—a disease, be it remembered, which may be fatal by apnœa and coma. Neither can we agree with him in advising cold applications externally in this disease, because such are, in our opinion, likely to increase internal congestion. The question of the expediency of tracheotomy is, in the author's opinion, to be decided by the actual condition of the patient. If persistent congestion of the lips and face (that is, irrespectively of spasm) be present, tracheotomy should be performed, and if there be a doubt as to the safety of postponing the operation, it should be resolved in favour of immediate action.

Diseases of the Circulatory System are discussed in Section 2. We are quite of the author's opinion that "irregularity of action is not to be regarded as sufficient proof of organic disease" (of the heart), if by "irregularity," as here used, is meant derangement of *rate* from emotional excitement, not of *rhythm;* the latter is decidedly symptomatic of organic disease of the heart. A double

murmur is rare in abdominal aneurism, and still more rare from the pressure of a tumour on the abdominal aorta.

A short, but for clinical guidance a sufficiently full, account is given of Addison's and Hodgkin's diseases, leucocythæmia, scurvy, purpura, and hæmophilia. The symptoms and signs of acute pericarditis are fully enumerated; as indicating effusion the "distant" character of the heart-sounds, and the "clicking" quality of the first sound are noticed; delirium, when an accompanying symptom, is attributed to cardiac debility. The author only partially approves of leeching for the relief of pain in acute pericarditis. Followed by a light poultice, a layer of cotton wadding or spongiopiline, the application of a few leeches at the seat of pain is, in our judgment, the most effective anodyne in the first stage of this disease. On the contrary, we disapprove entirely the application of ice over the heart, owing to the danger of collateral inflammatory congestion of the lungs and heart by repulsion of surface-blood, and through vasomotor agency, to which it would expose the patient. Chronic pericarditis, characterised by resistance to treatment, enlargement of precordial area, and failure of heart, and in the issue invariably fatal, is, in our judgment, in many if not in most instances associated with kidney disease. If there be a doubt as to the nature of a pericardial effusion, an exploratory puncture is recommended a sa step preliminary to treatment. To the assertion that a mitral murmur "is rarely, if ever, inorganic," we demur most emphatically. Such a murmur has repeatedly come under our notice in connexion with cardiac debility, to whatever cause due—most frequently the result of anæmia with palpitation (as in Graves' disease), or of progressive atony with dilatation of the left ventricle so often met with in the persons of worn-out domestic servants. In several such cases the absence of an organic (valvular) cause has been proved to our satisfaction by the cessation of the murmur under tonic treatment. Neither can we admit the author's statement that the mitral systolic murmur developed in the course of acute endocarditis is "a non-regurgitant murmur." We believe it is a result of tumefaction and consequent inadequacy of the valve, and that the absence of murmur in the left axilla and back is explained by the absence, as yet, of hypertrophy of the left ventricle. We hold that secondary endocarditis may be affirmed, if, with mitral systolic murmur, enlargement of the left ventricle, palpitation, and precordial distress coincide. We cannot subscribe to the doctrine that "no inference respecting the degree of obstruction or of regurgitation,

or of both combined, can be drawn from the murmurs." We hold, for example, that a mitral systolic murmur replacing the first sound indicates a greater degree of regurgitation than an accompanying murmur of the same rhythm. So, likewise, a presystolic murmur with a post-diastolic element, indicates a greater degree of mitral obstruction than a simple presystolic murmur. A musical note accompanying a murmur indicates, in the majority of cases, calcareous spiculation, and in the remaining instances (the few instances of a congenital vibrating tendon within the ventricle excepted) a flake of fibrin partially detached from the valve and playing in the current. Assuredly, therefore, this acoustic phenomenon supplies an exception (to adduce no other) to the too general statement that "the intensity and other characters (of murmurs) furnish no criterion for judging of the gravity of valvular lesions." We cannot, with the author, admit that the aortic regurgitant murmur may (save in *articulo mortis*) be inaudible where aortic reflux is in actual operation; neither can we conceive how, in connexion with this lesion, as stated by the author, a judgment may be formed as to the degree of valvular insufficiency by comparing the aortic with the pulmonic second sound. The aortic second sound is, in a large numerical proportion, including all the aggravated cases of aortic reflux, entirely suppressed, and even when this sound is present, its weakness is a measure of its structural rather than its functional deterioration. The degree in which, irrespectively of its quality, the second aortic sound is superseded by murmur, furnishes the true measure of valvular inadequacy. The gravity of valvular lesions, as justly remarked by the author, depends, not upon the lesions themselves, but upon their consequence, dilatation, and, we would add, concomitant deterioration of heart-muscle.

The paragraphs on hypertrophy and dilatation are good; fatty degeneration is discussed, and a distinction is properly drawn between that condition and obesity of the heart (fatty accumulation). Amongst the symptoms mentioned is the "Stokes-Cheyne" ("Cheyne-Stokes" in chronological order) respiration, a symptom which has hitherto been regarded as pathognomonic of cardiac (or aortic) tissue-deterioration, but which the author has met with in cases of cerebral exhaustion issuing in recovery. We have noted many examples of this symptom, but in no single instance have we observed it (due regard being had to its characteristic features) when atheromatous change with dilatation of the aorta,

accompanied or not by fatty degeneration of the heart, was not present.

Drawing our conclusions from many hundred cases of cardiac and renal disease carefully noted, we cannot, therefore, admit that "it ('Cheyne-Stokes'' respiration) is met with in cases of valvular lesions with enlargement, and in cases of Bright's disease without any cardiac complication." The author very properly denies to the *arcus senilis* any specific value as a symptom of fatty degeneration of the heart. Amongst the suggestions as to treatment of fatty heart, moderate exercise out of doors is recommended. Angina pectoris is well described, and a full *résumé* of its treatment is given.

The frequent association of functional with organic disease of the heart, and the importance of an adequate appreciation of this fact by the physician in the treatment of the case, are mentioned. An acoustic curiosity noticed by the author under the title of "regular irregularity," and which in one instance he found to continue for seventeen days, is that in which an adequate and an abortive systole of the left ventricle alternate with strict regularity, two acts of ventricular systole being represented by one of radial pulsation. We cannot, however, suppose with the author that any person but a mere tyro could mistake this for reduplication of either sound; the interval between two consecutive ventricular contractions is, even where the heart's action is inordinately quickened, much longer than that which separates in time the two elements of a double cardiac sound. Neither can we conceive how an example of reduplication of both sounds could, by a careful auscultator, be mistaken for one of "regular irregularity," as defined by the author. The absence in the former of a second cardiac impulse or carotid pulse would, irrespectively of the difference in quality and as to point of maximal intensity of the two dual sounds, suffice for the distinction. Reduplication of the first sound is not, as the author states, rare; it is ordinarily present in connexion with hypertrophy of the left ventricle in cirrhosis of the kidneys, and in that produced by athletic or other excessive muscular exercise. Reduplicate second sound is occasionally neurotic, but in most cases it is of grave significance, as indicating inequality of ventricular force and arterial tension. We unreservedly endorse the statement—"it is doubtful if an endocardial murmur is ever produced solely by functional disorder," interpreting "functional," as here employed, as equivalent to "nervous."

A good description is given of exophthalmic goitre, but no mention is made of the commonly associated symptom, if not potent factor, of the disease, menstrual derangement.

Special attention is directed to a prediastolic aortic murmur first described by the author as a sign of chronic deforming endarteritis. We must confess our inability to follow the author in his account of the genesis of this murmur; we cannot conceive how the column of blood, by simple backward elongation within the short range of the width of the valves, certainly much under an inch, could elicit friction adequate to the production of an audible murmur, nor yet how, between the commencement of aortic reaction and the closure of the valves, events virtually if not positively simultaneous, such a murmur could be intercalated, and its peculiar rhythm satisfactorily identified. A prediastolic aortic murmur may indeed result from partial leakage of the valve, but the author regards valvular inadequacy in any degree as preventive of this murmur. Dr. Flint is a high authority on this subject, yet we feel a difficulty, not in admitting a murmur of this rhythm, which we have, though rarely, heard, but in connecting it with the cause assigned to the exclusion of valvular incompetency. The author expresses the opinion, in which we entirely concur, that in thoracic aneurism murmur is, as the rule, audible, and that a double murmur is possible without inadequacy of the aortic valve. He has noted several examples of double aortic murmur from the extrinsic pressure of a tumour. In our experience a murmur due to this cause has been invariably single and systolic.

In discussing very briefly the signs of aneurism of the abdominal aorta no mention is made of the cessation of murmur in the erect posture—a sign of indubitable diagnostic value long since pointed out by Corrigan. The treatment of aneurism of the aorta is pretty fully described. Tufnell's method is favourably noticed, and iodide of potassium recommended. Thrombosis and embolism are discussed. Two examples of plugging of a primary branch of the pulmonary artery by a calcareous mass detached from one of larger size in the right ventricle, are referred to.

Section 3 is devoted to diseases of the digestive system. Hæmatemesis is fully treated, and the purely functional form of this symptom (in this case apparently at once the disease and its symptom), first described by King Chambers, is mentioned as having been repeatedly met with by the author.

That the absence of bile-pigment from the fæces may be due

to the habitual use of opium, we can fully confirm. In a case of insomnia now before our mind, in which, for several months consecutively, 15 ♏. of Battley's sedative were taken every night, the stools soon assumed a "clay-white" colour, which they retained till the opium was discontinued. The notice of "rectal alimentation," though brief, is good. Leube's "meat-solution" and Dr. A. A. Smith's preparation of defibrinated bullock's blood are recommended for administration by the bowel.

The "abortive" treatment of acute dysentery by means of ipecacuanha is referred to, but the author concludes, from a comparison of cases treated "expectantly" with others treated medicinally by this and other approved remedies, that the disease tends to run a natural course despite treatment, ending in recovery after eight to ten days when it does not lapse into the chronic form. Special attention is drawn to the remarkable tolerance of opium and alcohol in epidemic dysentery. He has observed a case in which, for several consecutive days, a grain of sulphate of morphia was given every hour, the patient not having been previously addicted to the use of opium. In a similar case he would allow a quart of spirit (whisky) daily, and have no fear of intoxication. In obstinate chronic dysentery exploration of the rectum by means of the speculum is recommended; and if ulcers or tumefied mucous membrane be detected, the free application of strong nitric acid, or a strong solution of nitrate of silver (℥ii. to the ℥i. of distilled water), after thorough cleansing of the surface, as successfully practised by Dr. Maure, of Memphis, and Prof. Thomas, is advised.

It is hardly conceivable that, even by the least enlightened practitioner, abdominal dermatalgia could be mistaken for acute peritonitis; and in reference to the differential diagnosis of hydroperitoneum from effusion the result of chronic peritonitis, we would supplement the author's teaching by adding that, in the latter affection, the abdomen retains its rotund figure from passive contraction of the abdominal muscles, whilst in the former, through relaxation and atony of these, the abdomen is expanded and collapsed in dorsal recumbency.

To the symptoms enumerated as indicative of gastric ulcer (simple), we would add a fixed pain in the region of the left scapula. The treatment recommended is exclusively dietetic, consisting mainly in rectal alimentation. Discussing the symptoms of cancer of the stomach, the author states that the tumour is usually fixed, not changing its position under pressure of the hand or

during full inspiration. According to our experience the rule is precisely the reverse; the cases in which the tumour is not freely movable are exceptional, indeed very few, and in these it is located at the pylorus, and attached to the pancreas or liver, which is likewise involved in the disease.

In reference to the seat of intestinal obstruction, a few remarks of great practical value are made. In the treatment of intussusception, abdominal section is discountenanced, except within the first twenty-four hours, and in the case of infants. A convenient distinction is made between "dyspepsia" and "indigestion," the former term being employed, in conformity with its etymology, to designate difficult (painful or protracted) digestion, the latter *mal*digestion. Dyspepsia is attributed to over-caution and denial rather than excess in the use of food. No doubt, chronic dyspeptics are cautious and self-denying, but is not this the result of experience rather than sentiment? Still there is much wisdom in the author's advice to this class of invalids—to think less about their food and the process of digesting it.

[*To be continued.*]

Atlas of Histology. By E. Klein, M.D., F.R.S., and E. Noble Smith, L.R.C.P., and M.R.C.S. Parts IV. to VIII. London: Smith, Elder, & Co. 1879. 4to.

In a former number we noticed the earlier parts of this work. The high opinion which we then expressed as to the truthfulness and beauty of the plates is amply justified by the parts now before us. In these as in the former parts the letterpress is exceedingly short and condensed—scarcely more than is absolutely necessary for the understanding of the drawings. This brevity is, we think, to be regretted. A work on histology by such an author as Dr. Klein would be one of very great value, and we trust that before long such a work will be forthcoming as a companion to the Atlas, which promises to be a real boon to all workers at microscopic anatomy.

As in our former notice, we shall here indicate some of the more important statements made in the text.

The fourth part of the Atlas treats of bone and the development of osseous tissue. There is not much here calling for comment, except the complete denial of metaplastic ossification, whether in cartilage or membrane. In all cases the bone-cells and the matrix

are developed from osteoblasts. We cannot but think this statement too sweeping, for although we fully admit that bone is generally developed both in membrane and cartilage neoplastically, yet we think that instances of metaplastic ossification are to be met with in both situations.

The large multinucleated cells met with in young bone play a double function. Some of them act as osteoblasts and produce new tissue, while others effect absorption of already formed bone, and are thus justly termed osteoclasts. These latter are opaque and striated on the side turned towards the bone which is undergoing absorption. It is by such cells also that the absorption of calcified cartilage is effected in the process of endochondral ossification, and not by the action of the blood-vessels of the medulla, as maintained by Ranvier. The drawings illustrating the process of osteogenesis, made for the most part from preparations prepared by Strelzoff's method, are exceedingly beautiful.

In part five are contained the chapters on Muscle and Nerve.

Each cell of unstriped muscular tissue consists of the following parts:—(*a*) A fine sheath, probably elastic, which possesses transverse linear thickenings—these are specially distinct when the muscle-cell or part of it is in a contracted state; (*b*) a central bundle of fibrils representing the contractile substance or the core; (*c*) an oblong nucleus which, within a membrane, includes a fine network. This network anastomoses at the poles of the nucleus with the bundle of fibrils of the core.

In the much-vexed question as to the structure of the fibre of striated muscle, the authors agree with Krause. They look on the thin discs as membranous septa connected with the sarcolemma, and dividing the fibre into a number of equal-sized compartments, in each of which is situated a broad disc composed of a number of sarcous elements placed side by side, and which alone represents the contractile portion of the muscle fibre. The connexion between the thin disc and the sarcolemma is, we think, rendered improbable by the fact that the former exists in the fibres of the heart, as in other muscles, while the cardiac fibres have no sarcolemma.

The differences in structure between red and pale muscles, discovered by Ranvier, are stated to be inconstant.

We find some interesting observations on the muscle corpuscles. These, consisting each of a nucleus surrounded by a small quantity of protoplasm, are the remains of the original protoplasm out of which the fibre has been formed. In the muscles of higher animals

these corpuscles lie on the surface of the fibre, immediately subjacent to the sarcolemma, with which, however, they have no connexion. "The younger the muscle fibre the more numerous the muscle corpuscles, and the greater the amount of protoplasm around them. When muscle fibres undergo increase in thickness and number, as during prolonged and systematic muscular exercises, we find the muscle corpuscles taking an active part therein; they enlarge and multiply, and the greater part of their substance is converted into muscle substance proper; the mode of this transformation is the same as in the embryo." In the diaphragm, a muscle which is constantly in action, and in which we may suppose that a continuous growth of new fibres is taking place to replace those which have worn out, we find many fibres possessing the embryonal character; "numerous and large muscle corpuscles form on the surface of the fibre, but underneath the sarcolemma a more or less continuous layer of polygonal or square cells of various sizes, each with one or several nuclei. The protoplasm of these cells is gradually converted, and hence passes insensibly, into the striated muscle substance."

A muscle fibre terminates in tendon in one of two ways—"(*a*) The contents of a fibre terminate conically, and the sarcolemma appears to pass on a tendon bundle of connective tissue fibrils; or (*b*) the muscular contents themselves seem to be continued, apparently without interruption, into the tendon bundle."

In the description of the connective tissue sheaths of the nerves, the account given by Axel Key and Retzius is closely followed, and in Plate XVIII. three of their figures are reproduced.

With regard to the nerve fibre itself, the authors hold that the axis cylinder is composed of minute longitudinal fibrils, held together by a granular interfibrillar cement substance.

The medullary sheath (white substance of Schwann) consists of a fatty semifluid substance, which coagulates very soon after death. This lies in the meshes of a reticulum, which, when seen in profile, gives the appearance of the rod structure described by M'Carthy and Lantermann in the medullary substance. The reticulum probably corresponds to the "stroma of neurokeratin" got by Ewald and Kühne by means of digestion with trypsin. Between the axis cylinder and the medullary sheath is a narrow space (periaxial space) containing fluid albuminous cement substance, which, when coagulated by hardening reagents, forms the granular membrane which was described by Todaro and Schmidt as sur-

rounding the axis cylinder. It is this substance which stains sometimes with silver nitrate so as to give the appearance of transverse bands or rings.

Into the account of Ranvier's constrictions an error has crept, no doubt by inadvertence. It is stated that the constrictions are more numerous on broad nerve fibres than on thin ones, whereas just the reverse is the case. A positive opinion is not given as to whether the axis cylinder passes continuously through a constriction, or whether, like the medullary sheath, it undergoes interruption, as affirmed by Engelmann. Of Lantermann's notches it is merely said that they have not been demonstrated on all medullated nerve fibres, and not in the whole course of the same fibre. The figure given in illustration is copied from Key and Retzius. The description of the sheath of Schwann and of the nuclei calls for no notice.

The varicosities seen on the fibres of the optic nerve and on those of the central organs are not due to coagulations of the medullary sheath, but to local accumulations in the periaxial space of the albuminous cement substance.

The sixth part deals with the spinal cord, optic nerve, and brain. In these chapters we find but little original matter. The account of the membranes is taken for the most part from Key and Retzius, that of the anatomy of the cord and brain from Gerlach and Meynert.

The authors consider that Gerlach has proved that in the spinal cord only the cells of the anterior horns possess axis cylinder processes. They also hold that each nerve-cell is surrounded by a pericellular space which communicates with the perivascular lymphatics; but such spaces as those represented in the figures in Plate XIX. are certainly much larger than any which exist normally in the cord, and must be the result of the distortion of the parts in making the preparations. A similar remark is applicable to the cells in the cortex of the cerebrum represented in Plate XXI. In the large pyramidal cells of the cortex of the brain the axis cylinder process is said to come off from the middle of the base. In the figures of these cells, however, all the processes are branched, and none have the character of axis cylinders.

We think this part the least satisfactory of all those which have appeared. There are many histological points which might have been illustrated by better and more demonstrative figures than those given, and the whole subject of the nervous centres is of such importance that it would well bear more extended treatment than

that which it has received; still many of the figures are of extreme beauty, notably that showing the structure of the cerebellar cortex, although we confess we have never seen the nervous network with anything approaching the distinctness with which it is represented.

Part seven treats of the ganglia and of the terminations of the nerves.

In the cerebro-spinal ganglia apolar cells (probably young or embryonal forms) occur, but most of the cells have one process. The junction of this in a T-like manner with the fibres traversing the ganglion, as described by Ranvier, is stated on the authority of Key and Retzius to be an arrangement of no general importance.

The cerebro-spinal ganglia of fishes and amphibia differ in no essential points from those of higher animals. The bipolar cells, described by Bidder, exist in fishes in an isolated manner in the nerve trunks in the neighbourhood of the ganglia proper.

Each ganglion cell lies in a special hyaline capsule, identical with the sheath of Schwann on the nerve fibres. This capsule is lined with a more or less continuous layer of small flattened cells, each with a round or oval nucleus. If the ganglion cell shrink within this capsule while it still adheres to it by points, an appearance is produced which has erroneously been taken for a multipolar cell.

The sympathetic ganglion cells are also enclosed in a sheath lined with endothelioid cells. They are apolar, unipolar, bipolar, or multipolar. The well-known cells of Beale and Arnold with spinal fibres occur not only in amphibia, but also in mammals.

The non-medullated sympathetic nerve fibres consist of a fibrillar axis cylinder, with or without a sheath of Schwann and nerve corpuscles (nuclei). They branch very often into two or three fibres. No notice is taken of the recent statement of Ranvier that these fibres in reality form a network with elongated meshes.

The nerve terminations in the skin and cornea are discussed at some length, also the special end organs, as Pacinian corpuscles, end bulbs of conjunctiva, and of genital organs, the tact corpuscles described by Merkel in the tongue and beak of birds, and the terminations of the nerves in muscles, tendons, and blood-vessels. In the case of unstriped muscle it is still uncertain whether the terminal nerves lie merely between the fibres, as maintained by Löwit, or whether they penetrate the cell to terminate in the nucleus or nucleolus.

The description of the nerve terminations in striped muscle is very brief, and is illustrated only by two figures, both copied from

Arndt, and intended to represent the terminations in the muscle of the frog. These figures are certainly very unlike the appearances generally seen in this animal. We think a fuller account of the various modes of terminations of the nerves in the muscles of different animals might have been given, and the interest of the subject would, in our opinion, justify the giving of a larger number of figures.

Part eight deals with the blood-vessels and lymphatic glands. The description of the capillaries and smaller arteries contains nothing new. The following point in the anatomy of the media of the aorta is interesting:—

"In the ascending aorta and arch there is a small inner section of the media that differs from the rest, in so far as the muscle cells are arranged in small groups, running either longitudinally or obliquely; they are separated by thick cylindrical longitudinal elastic fibres which are much branched, and in some places very close or even confluent. Between them are networks of fine elastic fibres, running longitudinally or obliquely. This inner portion amounts in the ascending branch and the arch to about an eighth or tenth of the whole thickness of the media, and gradually passes into the outer part, the muscle cells becoming transverse, and the thick elastic fibres becoming confluent into membranes placed horizontally or obliquely. But there are groups of longitudinal muscle cells also in the outer part of the media, especially near the adventitia."

The veins are described as having three coats. Considering the great variety in the arrangement of the muscular element in the walls of the veins, it is, we think, more convenient to describe only two coats, as has been done by Ranvier and some other anatomists.

The development of blood-vessels takes place by the hollowing out of solid protoplasmic structures which are either sprouts from the walls of already pre-existent vessels or connective tissue cells. The hollowing out is effected either by a process of vacuolation or by extension of the canalisation from the lumen of a previously formed vessel. In these protoplasmic structures blood corpuscles become developed. The process of formation of vessels is the same in the embryo and in the adult, in normal and in pathological conditions.

In the description of the heart there is nothing calling for special notice, except the observation that the endothelium covering the mitral valve, chordæ tendineæ, and papillary muscles consists sometimes in young hearts of "germinating cells"—*i.e.*, the cells are small, granular, stain in silver, and lie in several layers one over the other.

The account of the structure of the compound and simple lymphatic glands is exceedingly good, although very short, and the figures illustrating this part are perhaps the most beautiful of all those which have as yet been given in the Atlas.

The adenoid tissue is described as consisting of the ground substance or matrix, a dense reticulum of fine homogeneous fibrils and membranes joined into a honeycomb. This honeycomb contains all gradations between fibrils and plate-like expansions. Applied to this reticulum are flat endothelial cells, whose nuclei generally lie at the nodal points of the reticulum. In the meshes of the reticulum lie the lymph corpuscles, and the whole is abundantly supplied with blood-vessels.

In the case of the tonsils and the lymphatic follicles of the intestine, the adenoid tissue is said in many instances to encroach on the epithelium of the surface, which gives way before the reticulum and lymph corpuscles.

In the spleen the arteries are ensheathed in cord-like masses of adenoid tissue. The Malpighian corpuscles are in most cases merely transverse sections of such cords, and not, as usually described, spherical or oval masses placed laterally on an arterial branch.

In concluding this notice, we have again to express it as our opinion that, so far as illustration is concerned, the "Atlas of Histology" has no rival among works on microscopic anatomy. It is not fair to criticise too closely the letterpress, as the authors aim not at comprehensiveness so much as brevity; but brief as it is, we think there will be few readers who will not derive much useful and suggestive information from most of the chapters. To the publishers the highest credit is due for the manner in which the work is brought out, and for the punctuality with which the parts appear.

Internal Urethrotomy, with its Modern Improvements. By Edward Lund, F.R.C.S.; one of the Surgeons to the Manchester Royal Infirmary, and Professor of Surgery in the Owen's College. London: J. & A. Churchill. 1877.

The author of this essay, if we may judge from his preface, seems to consider that we have almost reached the long-wished-for goal in the treatment of stricture—namely, its permanent cure. He remarks in its last paragraph:—

"Hitherto surgeons seem to have directed their attention more to the relief of stricture than to its cure; it is the author's hope that a careful

perusal of this essay may lead to the latter result being the more frequent consequence of this treatment."

There is no subject to which the term cure is more vaguely applied than to the treatment of urethral stricture, numberless writers having recorded cases as cured in which but a short time previously the urethra had been enlarged to its full calibre. But the disinterested practical surgeon well knows that the permanent cure of urethral stricture, no matter how treated, is an exceedingly rare result.

Although our experience coincides with that of Sir Henry Thompson, quoted by the author, that there is nothing "so efficient, so safe, and so certain," we still think that internal urethrotomy cannot be credited with many *permanent* cures.

With regard to the pathology of stricture, the author writes thus:—

"The notion in times past was, that the canal became contracted by the deposition of lymph or other organisable matter in the submucous tissue, pushing the lining membrane inwards towards the centre, and thus causing a diminution of the size of the passage at some given spot."

That this is the true account of the pathology of stricture has, from a long period, appeared to us doubtful, for many strictures will continue enlarging during the successive sojourn of catheters of the same calibre in the urethra, so that the enlargement could not have been caused by stretching, nor scarcely by the absorption of lymph, for were the latter the case it would be difficult to believe in its redeposition in the subsequent relapse of the stricture. The author seems to consider that these "deformities of the urethra are almost invariably the result of cicatricial changes resulting from previous inflammation, ulceration, loss of tissue, and subsequent cicatrisation."

This view also may be doubted; for it is well known that organic stricture is much more frequent in the region of the bulb than anterior to it, and yet the latter is too often the seat of intense and prolonged inflammation.

Speaking of the division of strictures into traumatic and organic, he states that the same changes occur in both, although "to a miniature degree" in organic stricture. He compares these changes to cicatrices after burn.

It was somewhat puerile in Mr. Lund to reprint Mr. Cock's description of the formation of a false passage by means of a fine

bougie; neither was it necessary to give the methods for trying to pass a fine bougie or for finding the orifice of a stricture, all of which have been published over and over again by other writers.

Mr. Lund alludes to two methods for preventing the entanglement of the filiform bougie in what he calls "the recesses and nooks and corners of the urethra."

We shall allude to only one of these, as he seems to be unaware that it was the first operative step practised by Desault when dealing with difficult strictures.

Of this method Mr. Lund says that—

"The one is to pass down the urethra, as far as the first obstruction, a urethral tube of gum-elastic, open at each extremity, and, holding it firmly at the spot, to slip the filiform bougie along the interior; then very carefully manipulating, first withdrawing the tube a little, so as to expose a certain length of the fine bougie, and then pressing the tube for a short space, we may at last succeed in passing the bougie and withdrawing the tube."

A urethral tube, open at each extremity, was, as we have just stated, the first step in the method of Desault, who used the tube for passing his conducting wire down to the stricture, and should not have been put forward as new by the author when describing this method.

If we are not much mistaken he is indebted for the matter of the first paragraph of page 14 to the writings of Sir Henry Thompson, whose name does not appear in it.

We fully agree with Mr. Lund on the value of rest in the treatment of stricture. This, however, is so well known we will not dwell upon it.

We are next presented with a case of tight and complicated stricture, in which he ultimately performed internal urethrotomy, and which, according to the author, "made a complete and rapid recovery," although he omits mention of the condition of the patient immediately before the publication of this essay.

Mr. Lund alludes to one instance in which death followed internal urethrotomy, which he attributes to operation on a recently acutely inflamed urethra. We must concur in the following remarks by him on this case:—

"We should endeavour in every case of treatment, preliminary to the operation of urethrotomy, to get the urethral canal into as quiet a state of action as possible."

He pays a passing tribute to the value of Mr. Teevan's urethrotome (a modification of Maisonneuve's), the one he used in the case. This instrument cuts from before backwards, and has shields which conceal the cutter or blade, and protect the urethra when the latter is not in action. This sheathing of Maisonneuve's blade, however, is not so very new, and if the author looks into Voillemier's work he will see a delineation of the blade protected in this manner.

We are not very partial to Maisonneuve's instrument or to any cutting operation from before backwards, preferring the operation from behind forward with Civiale's urethrotome or with one of its modifications.

In order to avoid or to anticipate the hæmorrhage which may follow upon division of a urethra contracted near the glans, the author recommends section of this part with a small bistoury guided by a director, or with a very small urethrotome, of which he gives an engraving.

Speaking again of the sheathed Maisonneuve blade, he says:—"It must be remembered that this method of using a knife protected by a sheath differs from Maisonneuve's method in the fact of its being only those parts of the mucous membrane and submucous tissue of the tube that are cut through which correspond to the contracted portions." This objection is well founded, a fatal case being on record, of which the author makes no mention, and in which the whole urethra was slit open by Maisonneuve's blade, and the stricture, curious to say, being less deeply divided than the remainder of the canal. It is but just to Mr. Lund to observe that he states "there is great danger of the urethra being divided not only where it has been contracted and is the least vascular, but also in other places."

As we proceed we find some observations which enable us to judge of the author's meaning of the term *cure* when speaking of stricture. Alluding to catheterism in the after-treatment of internal urethrotomy, he observes:—"It being part of the system that having once secured a full incision, laceration, and dilatation of all the resisting fibres of the urethra, there is no fear of such an amount of contraction as to bring back the urethra to its previous abnormal dimensions" (p. 27). One of our reasons for preferring the incision from behind forward to that recommended by the author is the belief that a full incision or complete division of the stricture is more likely to be insured by the former than by the latter method. Indeed he admits so much at page 30, where he observes that

" some of the contracted spots of old cicatrices in the urethral walls will doubtless still remain untouched after the upper section of the canal."

Internal urethrotomy being Mr. Lund's hobby, he speaks more or less disparagingly of the method practised in England by Mr. Holt; and to give seeming weight to his criticism, he tells us he has practised very largely Mr. Holt's plan.

We, however, consider that to follow any one method in the operative treatment of stricture is not very sound surgery, and that divulsion and internal urethrotomy are not equally suited for organic strictures in the portions of the canal liable thereto—internal urethrotomy being more adapted than divulsion for very resilient strictures and for strictures in the antescrotal urethra.

To lessen the risk of purulent infection, Mr. Lund never operates while "there is a distinctly purulent discharge from the urethra." He uses "clean instruments, all of which should be smeared with carbolised oil at the moment of use."

He winds up with commending internal urethrotomy "to the attentive consideration of those surgeons who are anxious to get rid of the opprobrium so often attached to the treatment of stricture that it is a condition of things for which there is no permanent cure;" while to those who would doubt the efficiency of this operation or the permanency of its results, or who from old prejudices still cling to the ancient method of repeated dilatation in this tedious surgical disease, he would simply say—"Give the operation an honest trial, and let your strictures cease;" and yet in the history of the single case he gives to illustrate this treatment, he omits nearly all dates of the treatment, mentioning only those of the treatment near its termination—viz., Sept. and 15th Nov., 1876.

Now, this essay was published in July, 1877, so that he had ample time for unarming criticism by having, immediately before going to press, either a full-sized bougie or catheter passed into the man's bladder by an unprejudiced observer, and thereby for giving confirmatory weight to a *permanent* cure of about ten months!

Modern Meteorology. A Series of Six Lectures delivered under the auspices of the Meteorological Society in 1878. London: Edward Stanford. 1879. Crown 8vo. Pp. 186.

In the Preface to this series of most interesting lectures it is aptly said that the science of Meteorology may well receive the designation of "Modern." Its renovation dates from the proposal to employ telegraphy in the transmission of meteorological observations—a proposal which was realised hardly more than a quarter of a century ago.

As soon as observations taken simultaneously and collected by telegraphy were laid down on charts, an entirely new light was thrown upon the complex phenomena included under the simple term "Weather." Charts so prepared began to be published, and the changes of weather induced by the mutual action of cyclones and anticyclones were for the first time studied by the people at large. The diffusion of this knowledge is slow, and therefore it appeared to the Council of the Meteorological Society that a course of lectures explanatory of modern views would be well-timed. Accordingly the six lectures contained in the neat volume before us were delivered in the autumn of 1878, in the Theatre of the Institution of Civil Engineers, London.

Lecture I., on "The Physical Properties of the Atmosphere," is by Dr. Robert J. Mann. In clear and terse language the author gives a capital *résumé* of the subject with which the lecture deals.

Lecture II., on "Air-Temperature: its Distribution and Range," is by Mr. J. Knox Laughton, mathematical instructor and lecturer on Meteorology at the Royal Naval College, Greenwich. It is written in a more popular style and in less precise language than Dr. Mann's lecture, but nevertheless it is both instructive and fairly exhaustive.

In Lecture III., on "The Barometer and its Uses," Mr. Richard Strachan first introduces the reader to the modern system of weather-study. We could wish that this lecture had been a little more concise or a little less discursive. Nor are the author's definitions always expressed in the best and most intelligible form. Take this for an example—"An isobar is a line passing through places which had at a definite *epoch* equal readings of the barometer" (p. 93).

By far the most original and interesting of these Lectures is the fourth, on "Clouds and Weather Signs," by the Rev. Clement

Ley, M.A. Perhaps it is that the poetical nature of the subject and the evident enthusiasm of the lecturer impart a refreshing charm to what he has written. Take an instance. In describing a beautiful tinted lithograph representing various cloud-forms, the author says:—

"On the right-hand side of the picture I have given, by way of contrast, the bold level-based cumulus, which is often the precursor of a hail or thunder shower; a handsome, but rakish and suspicious character, whose proceedings you should watch with some care. By and by he will probably begin to assume his tufted crown, 'fœnum habet in cornu'—to misquote a Latin poet—'hunc tu, Romane, caveto'—put on thy waterproof, O Briton."

Apropos of "cumulus," we find no allusion to the peculiar cloud-slopes which are usually seen in connexion with this cloud, and which can scarcely have escaped the observation of so practised a "nephologist" as Mr. Clement Ley. These cloud-slopes, which are generally from left to right, as the observer stands with his back to the point whence the clouds are coming, are of special interest, as affording ocular demonstration of the outward flow of air in the higher strata of the atmosphere in cyclonic systems, or areas of relatively low atmospherical pressure.

In Lecture V. we are once more brought down to earth from the clouds, like the "Rain, Snow, and Hail" of which Mr. George J. Symons, F.R.S., speaks with all the authority of a man who has devoted years of incessant labour to the study of the rainfall of the British Islands. The one fact that Mr. Symons annually publishes returns from upwards of 2,000 observing stations in the United Kingdom is surely sufficient to direct the reader's careful attention to this admirable lecture, in which the important results already attained are summarised and discussed.

The sixth and last Lecture of the series was given by Mr. Robert H. Scott, F.R.S., Secretary to the Meteorological Council of the Royal Society. The subject is "The Nature, Methods, and General Objects of Meteorology," and we do not hesitate to say that it has received full justice at Mr. Scott's hands. In answer to the question, "What are the ultimate uses of Meteorology?" Mr. Scott says they are twofold:—

"Firstly, there is the strictly scientific use, the enabling us to gain a more intimate knowledge of the conditions of our own atmosphere, and thereby of the earth as a member of the solar system.

"Secondly, however, its immediate practical use is the foretelling of

weather. Shirk the admission how we may, it cannot be denied that the most abstruse discussions of meteorological data have hardly another object than the determination of the average conditions of the climate of each place, and of the amount of variability which may be anticipated in the march of each element. What is this but forecasting?

"In marine meteorology, again, we search laboriously for true mean values to indicate to the seaman where he may find 'a fair wind and a favourable current;' and what is this but implied prophecy?

"The fact is, there is not a profession, not a handicraft, not a process in animal or vegetable life, which is not influenced by meteorological changes, and there is not a human being to whom a knowledge of coming weather would not be of value.

"Had we a quarter of a century ago known the rigour of the Crimean climate, who would have dared to have sent out an army unprepared to meet the hardships of a Black Sea winter? Ask the physician at what price he would value the power of giving timely warning of the coming of a 'cold snap' to his patients. Ask the builders of London what they have lost in the last ten years by sudden frosts or unexpected downpours of rain. Above all things, go to the farmer, and ask what he would freely pay to know at seedtime what weather he might really expect in harvest.

"The roll is endless. A knowledge of meteorology is of the very first importance in every stage of human life, civilised or uncivilised.

"Hence we learn the attractiveness of all manifold attempts made to foretell the character of the weather and seasons, whether these be the venturesome storm warnings of our Transatlantic neighbours or the sun-spot researches of Mr. Meldrum and Dr. Hunter."

In concluding this notice of "Modern Meteorology," we have to express our approval of the neat manner in which this little volume has been brought out by the publishers, the well-known firm of Edward Stanford, of Charing-cross, S.W.

St. Thomas's Hospital Reports. New Series. Edited by Dr. Robert Cory and Mr. Francis Mason. Vol. IX. J. & A. Churchill, London. 1879. Pp. 357.

Although the present volume is inferior to last year's both in bulk and in variety of papers, still, from the interest attaching to several of the communications, it is fairly worthy of its predecessors. The first paper in this series advocates the treatment of epithelioma of the uterus by erasion—a proceeding by no means new, but one which had been, undeservedly, as the author contends, lost sight of.

Dr. Curtis's mode of procedure does not differ from that described by older writers. When the uterus is brought into view by a Neugebauer or a duck-bill speculum, all the diseased tissue, whether sprouting from the cervix or filling its interior, or occupying the uterine cavity, is then scraped away with the curette. If the case be of the non-vegetating character, the ulcerating surface is similarly lightly but carefully scraped. The amount of bleeding is generally trifling, and rather diminishes than increases as the operation proceeds. He believes the healthy tissue of the cervix is too dense to be scraped away, and when the curette ceases to remove tissue on its application it may be considered an indication that the limits of the operation are reached. After the scraping an escharotic is used for small surfaces, a galvanic cautery for large. The escharotic he prefers is the acid nitrate of mercury. On two occasions he has known salivation follow its use. Out of twenty-two cases thus treated only one was followed by pelvi-peritonitis, which, however, did not end fatally. Dr. Curtis, with becoming modesty, will not prophesy for his plan ultimate success, but he believes that of all the plans he has tried it has given the best results, both palliative and curative.

Dr. Walter Kilner supplies a happy instance of theoretical therapeutics leading to practical effects. Arguing that, as the lowering of temperature caused by taking salicylic acid is always accompanied by profuse perspiration, and that a necessary accompaniment of perspiration is the determination of blood to the skin, he believed that in cases where diarrhœa arose from a hyperæmic condition of the intestines, salicylates might be able to arrest it. As the bismuth and calcium salts are reputed sedatives of the mucous membrane, these bases were selected, more especially as the salts they form with salicylic acid are bland and sweet, and have no irritating effect upon the throat during the swallowing of the medicine. Dr. Kilner, so far as he could trace out the results, found them almost uniformly favourable, but as he seems to have administered them only to out-patients he is not able to tabulate them. As he expected, he experienced chief benefit when the diarrhœa seemed to be entirely dependent on the heat of the weather:—

"It seems not improbable in these cases that the diarrhœa is an effort of nature to reduce the temperature of the body, the sweat glands being either incompetent, or else not sufficiently active to perform the extra duty suddenly required of them. Here the salicylates not merely check the diarrhœa, but also cool the body by their influence on the sweat

glands, assisted by the direct cooling action of the air upon the larger quantity of blood impelled through the cutaneous capillaries; and in addition, the stimulation of the glands does not terminate with the leaving off of the medicine, thus enabling the child to become accustomed to the hot weather."

In another class of cases, when the diarrhœa is caused by improper food, the drug may be expected to be of use by arresting the decomposition or fermentation of substances in the alimentary canal; but when the intestinal derangement is secondary—being derived by reflex action from some other part, as occurs in the dentition of infants—no effect will be produced. During the exhibition of the salicylates for diarrhœa they give rise to two effects worthy of notice:—

"First, as long as the diarrhœa lasts the skin continues dry, or, at the most, regains its natural moisture; but this moisture varies inversely to the purging; nevertheless, even when the stools have become solid, there is rarely if ever much perspiration, although the same-sized doses, when given for most other illnesses, cause the child to be bathed with it. Secondly, he has never seen a case of diarrhœa in which the usual head symptoms of salicylic acid have shown themselves, although with the same dose during other illnesses they have appeared."

He advises the salts to be given in good-sized doses—two or three grains for a child under six months, and from three to five, or more, when above that age. Dr. Kilner details several cases; his line of reasoning would apply perhaps more forcibly to jaborandi.

Mr. Edward Nettleship has contributed some excellent notes on tobacco amblyopia. He states that the subjects of this affection suffer chiefly from impairment of central vision, unlike the subjects of progressive atrophy of the nerves, in whom peripheral contraction of the field is an early event. Also, that in tobacco amblyopia, as in early uncomplicated nuclear cataract, the sight is best in a dull light. The patient always says he can see better the first thing in the morning, and again towards evening. As to the visual field the greatest functional defect is always found to occupy an oblong patch, which extends from the fixing-point (corresponding to the yellow spot) out towards and often beyond the blind spot (corresponding to the disc). This central scotoma is only defective, never blind, and is invariably symmetrical in the two eyes, indicating affection of parts of the retinæ which correspond anatomically, but are not physiologically identical—a fact which is strongly in favour of the symptoms not being referable to any cerebral or central

lesions; and Mr. Nettleship conjectures the change occurs chiefly in the fibres at the periphery of the nerve, which are believed to supply the central part of the retina. The part alcohol plays in aiding to produce this form of amblyopia is obscure; it may be sought for in vain among non-smokers, but is at the same time rarely observed in smokers who are water drinkers.

The paper which follows is a remarkable one. Dr. Edmund Montgomery has devoted four years of exclusive study to the nature and import of the movements of protoplastic particles, with the view of discovering the conditions on which these movements depend, and, so to speak, eventually storming the citadel of vitality itself. In observing the simplest form of movement, he, by a process of exclusion, concludes that none but a chemical hypothesis can account for a seemingly spontaneous molecular change.

"The mobility of protoplasm is therefore a complicated activity, dependent on disintegration and reintegration of protoplasmic substance—disintegration inducing directly or indirectly contraction, and reintegration leading always to re-expansion."

The author feels the difficulty implied by the term reintegration; but he believes that the protoplasmic molecules, exerting an affinity for certain portions of extraneous matters presented to them, combine with them, and consequently dilate. But in spite of the great ingenuity displayed by the author, this transcendentalism of evolution brings us very little nearer to the solution of the problem of life.

Dr. Ord continues the subject of baths in hyperpyrexia, on which he published an instructive paper in last year's Reports. He now details ten cases of enteric fever in which the graduated bath was used, and two of which ended fatally. Notwithstanding this somewhat average death-rate he is of opinion that the systematic employment of this kind of bath as early as the seventh or eighth day of fever is likely to contribute importantly to the reduction of mortality from enteric fever in hospitals. He sums up most concisely his observations as follows:—

"That the graduated bath—reduced during a period of from twenty minutes to thirty minutes from between 90° and 100° to between 70° and 60° Fahr.—is a powerful agent in the reduction of febrile temperatures; that in enteric fever it is most efficient and most safely applied early in the disease; that it is not contra-indicated by intestinal, cerebral, or pulmonary complications, but, on the contrary, distinctly tends to check them; that it is contra-indicated by excessive feebleness or rapidity of

the pulse, or by great exhaustion; that it is desirable in many cases of intense fever to use the bath more than once—in fact, to repeat it so long as the fever is unchecked, but not to repeat it at shorter intervals than twelve hours, an apparent revival of the temperature often subsiding after such a period."

A General and Historical Treatise on Cancer-life; its Causes, Progress, and Treatment. By ROBERT MITCHELL, M.R.C.S. London: J. & A. Churchill. 1879. 8vo, pp. 193.

THE ambiguous title of this volume led us to expect contents of a like character, and after a perusal of them our expectations were fulfilled. Were this the only fault of the book it might be passed over; but, in addition, its physiology and pathology are ludicrous, and the construction of the sentences is such that a reader can hardly help losing his temper, if the amusing and futile attempts of the author to prove his case had not a counteracting effect. The following passages will give a good general idea of the nonsense which is contained in this book:—

"As cancer structure is of an abnormal and irregular kind, is it not probably the result of an unnatural agent? Yes.

"Is, then, the unnatural agent of an active or passive kind? and is it organic or inorganic? Active, as the disease is in constant active progression; and organic, for inorganic matter is passive, and could not, therefore, induce such results, could not enlarge itself, has no multiplying function such as is manifested in cancer.

"Holding that cancer is essentially a non-inflammatory disease, I believe that the temperature of the body is a non-essential of the disease, depending on extrinsic causes, and not on the disease itself."

In p. 22 there is a paragraph headed "*Castration for a Dog suffering from Cancer, what effect on the Cancer?*" But the following pages contain no reply to this question, nor is the word dog to be found again in the same chapter.

The theory of the origin of cancer propounded in this book is the most absurd we have ever heard of, and requires for its acceptance a thorough ignorance of physiology and pathology. Fancy anyone believing that certain constituents secreted by the testicle and ovary, which, according to Mr. Mitchell, are constantly pervading every part of the body, are the cause of cancer, by being deposited in certain tissues—as, for instance, in the female uterus and breast after the cessation of menstruation!!

The quotations, which are abundant, are given in such a careless manner that it is impossible to say what belongs to the author, except for the style.

Van der Kolk is the authority upon cancer who is made to appear to support Mr. Mitchell's views, but although the necessity for using the microscope is referred to, the researches of modern pathological histologists are entirely ignored. Witness the statement that "cancer" is devoid of lymphatics and of blood-vessels!!

The "sensuo-generic cell" is a myth, a creation of the imagination, and as such it will remain. The only part of the book that we agree with is the statement on the last page but one—"My claim is original, and no one but myself could argue its various points."

THE HOT-AIR BATH IN HYDROPHOBIA.

Dr. Southam reports the case of a young woman, aged twenty-eight years, who was admitted into the Royal Infirmary, Manchester, nearly six weeks after being bitten by a rabid dog. Curare was exhibited, but respiratory efforts became more and more difficult, with a sense of intense suffocation and inability to clear the throat of mucus. The patient was therefore wrapped in blankets, placed under a cage, with a large spirit-lamp burning beneath the cage. In less than a quarter of an hour a marked change occurred, spasms became less frequent, and disappeared in half an hour subsequently, the breathing becoming more regular and less rapid. The treatment was continued for an hour and a half with great comfort to the patient, who lay quietly in bed, feeling perfectly easy, and expressing a desire to go to sleep, as well as her gratitude for the relief afforded. She dropped off into sleeps of fifteen to twenty minutes' duration, but suddenly awakening from a calm sleep, that had lasted half an hour, in a violent paroxysm, she started up in bed, discharged saliva copiously, and died very suddenly from spasm of the glottis two hours after the hot-air bath had been discontinued. In *The Lancet*, February, 1868, p. 222, Dr. Peter Hood reports a case of a French physician who decided to destroy himself by a hot bath rather than endure the agonies of hydrophobia, but who, finding the relief afforded so great, altered his plans, and was eventually restored to health. This, doubtless, is the same case as M. Bouisson's, reported in *The Lancet*, September, 1877, p. 478, who, subsequently, is reported to have successfully treated eighty cases of hydrophobia by means of the Turkish bath. In the subsequent numbers of *The Lancet*, for the same year, are numerous interesting communications upon the same mode of treatment.—*Lond. Med. Record*, Oct. 15, 1879.

PART III.

HALF-YEARLY REPORTS.

REPORT ON

MATERIA MEDICA AND THERAPEUTICS.[a]

By Walter G. Smith, M.D., Dublin; Fellow and Censor, K.Q.C.P.I.; Physician and Pathologist to the Adelaide Hospital.

Art. 3. Chloral.
„ 1. Chrysophanic acid.
„ 2. Iodoform.
„ 4. Poisonous Solanaceæ.

1. *Chrysophanic Acid, source of.*—For some years past there has been met with in commerce, under the name of Goa or Araroba powder (or, Poh' di Bahia), a drug which had attained a reputation as a remedy in various diseases of the skin, and is now more widely known as the source of chrysophanic acid. The botanical source of "araroba" (goa powder) has been a moot point among the most eminent of our Indian and home pharmacologists, the statements regarding it being as conflicting as they are various, owing to the difficulty of determining the affinities of a vegetable product, knowing nothing of the flowers and fruit of the plant. These have at length been procured, and Dr. J. de Aguiar has just published at Bahia a pamphlet which satisfactorily clears up the mystery which has so long attended the natural history of the drug, and definitely settles the true source of araroba. Dr. de Aguiar ascribes it to *Andira Araroba*, N.O., Leguminosæ, one of the larger intertropical trees met with south of Bahia. The wood has a yellow colour, and is very porous, having numerous longitudinal canals visible to the naked eye. The trunk, in a transverse or tangential section, presents

[a] The author of this Report, desirous that no contribution to the subjects of Materia Medica and Therapeutics should remain unnoticed, will be glad to receive any publications which treat of them. If sent to the correspondents of the Journal they will be forwarded.

lacunæ, more or less large according to the age of the tree, and in these a pulverulent substance (araroba) is found, which in trees recently cut down and before being dried is of a light or pale tint, clearer than that of the wood. The workmen employed in collecting it suffer from irritation of the conjunctiva, which sometimes passes into inflammation of that membrane, and the face will remain swollen and erythematous for some time, but to produce these effects it requires that its action shall be prolonged during a day or more. With regard to the production of the araroba, the author gives it as his opinion that it is formed by the oxidation of the resin which exists in great abundance in the tree, the oxidation being facilitated by the canals made by insects. He explains the presence of the larger cavities in the tree by the corrosive action of the araroba on the wood. He has not, however, as yet confirmed his theory by experiment. The araroba is collected throughout the year, the older trees being selected because the powder occurs in them in greater abundance. The trunk is cut into sections transversely, and these are then split longitudinally. The portions containing powder are then chipped or scraped off with an axe, which is done the more easily as the wood in these parts offers but little resistance. The colour when freshly collected varies from that of the flower of the cotton plant (pale primrose colour), becoming by the action of the air darker, to that of rhubarb, and finally dark purple. The commerce of this article is now chiefly developed in Camamu and Taperoa, although the tree exists in abundance in all the southern part of the province of Bahia, and, according to Drs. Bomfim and Agnello Leite, also in the forest of Sergipe. The tree is not cultivated, but propagates itself spontaneously.

As another source of chrysophanic acid the wood of the Brazilian Ipé tobacco tree is suggested, as from it Dr. Peckholt reported in 1873 that he had obtained 21·8 grams of pure acid per kilo. A decoction of this wood is used in Brazil for ringworm, and a decoction of the bark internally and externally against herpetic affections, and as a gargle in angina tonsillaris.

Properties of.—Chrysophanic acid, as met with in the English market, is in the form of a light powder of turmeric yellow tint, sp. gr. (approximate) 0·847. It is soluble in benzol, chloroform, turpentine, and in the fixed and volatile oils to a large extent; sparingly soluble in ether and alcohol; and insoluble in water, glycerin, and in solid paraffin. It is dissolved by sulphuric and

nitric acids—in the latter to a less extent—by caustic potash and by ammonia; fuses at 123·3° C., and boils at 232·2° C. At the latter temperature it is decomposed into a dark green resinous-like substance, which is largely soluble in ether.

Ol. jecoris dissolves twice its weight of the acid, yielding a mixture containing 70 per cent. Ol. olivæ, ol. pini sylvest., creasotum, ol. terebinth., ol. lavand., and vaselin, dissolve readily their own weight of acid, yielding mixtures containing 52 per cent. Taking advantage of its solubility in the fixed oils, a considerable saving may be effected in preparing ointments direct from araroba. Ol. olivæ thoroughly exhausts that substance, yielding the acid after removal of the oil by ether in a state of purity.

Liebermann and Seidler have lately subjected goa powder to a renewed chemical examination, and they have arrived at the conclusion that the substance originally contained in goa powder is not chrysophanic acid, and that the chrysophanic acid actually obtained by Attfield was an altered product derived from the substance originally formed in goa powder, and to which the authors propose to restrict the name of chrysarobin. The two bodies are distinguished by the following tests:—Chrysarobin dissolves in concentrated sulphuric acid with a yellow colour, and chrysophanic acid with a red colour. Chrysophanic acid dissolves in very dilute potash solution with a red colour, while chrysarobin remains in it undissolved, but in a stronger potash solution it dissolves with a yellow colour and strong green fluorescence. Fused with potash chrysophanic acid gives a blue mass, whilst chrysarobin forms a brown one. When the alkaline solution of chrysarobin is shaken with air the yellow colour passes very rapidly into the red of chrysophanic acid. This last reaction the authors look upon as the key to the nature of chrysarobin as well as to the varying results obtained by Attfield, the oxidation product of chrysarobin so obtained being chrysophanic acid.

Adopting the formula $C_{30}H_{26}O_7$ for chrysarobin, and taking into consideration the results obtained in some experiments to ascertain the amount of oxygen absorbed by chrysarobin during its conversion into chrysophanic acid, the authors represent the reaction by the following equation:—

$$C_{30}H_{26}O_7 + 2O_2 = 3H_2O + 2C_{15}H_{10}O_4.$$

Chrysarobin. Chrysophanic Acid.

(*Pharm. Journ.*, March 15, April 26, May 3, July 19, 1879.)

2. *Iodoform.*—In order to obviate the powerful and penetrating odour of this drug, and so to facilitate its prolonged use, Dr. Vulpius, of Heidelberg, recommends the addition of one or two drops of oil of peppermint to every 10 grams (*i.e.*, about 6 drops to ʒi.) weight of the preparation (ointment, liniment, &c.). It is stated that the odour is completely masked.—(*Rép. de Pharm.*, Mars, 1879, from *Pharm. Zeitung.*)

In a recent communication, Dr. Lindemann states that balsam of Peru is capable of completely concealing the disagreeable odour of iodoform. The addition of 2 parts of the balsam to 1 of iodoform is sufficient, but a greater quantity of the former may be used. The best vehicles for ointment are lard, glycerin ointment, and especially vaselin; and for liniment, glycerin, spirit, and collodion. Dr. Lindemann gives the following formulæ:—℞. Iodoformii partem i.; balsami Peruviani partes ii.; vaselini, *seu* adipis suillæ, *seu* unguenti glycerini, partes viii. Fiat unguentum. ℞. Iodoformii partem i.; balsami Peruviani partes iii.; spiritûs vini rectificati, *seu* glycerini, *seu* collodii, partes xii. Misce. In making these preparations, the iodoform and balsam should be first rubbed together, and the other ingredients then added.—(*Brit. Med. Journ.*, Sept. 27, from *Allg. med. centr. Zeit.*)

From Binz's experiments it appears that iodoform, administered internally, exercises a narcotic action upon the dog, and still more upon the cat. In poisonous doses it produces acute fatty degeneration of the liver, heart, and kidneys, and leads to death through a form of generalised paralysis, with a notable fall of temperature. When iodoform is left in solution in a liquid fatty body, it is decomposed, and after a few hours iodine is set free.—(*Rép. de Pharm.*, Avril, 1879, from *Arch. f. exp. Path. u. Pharm.*)

3. *Chloral.*—Some authors have asserted that chloral is not soluble in fatty bodies, but in the *Rép. de Pharm.*, Dec., 1878, M. Catillon shows that this is erroneous, and he proposes various formulæ which it may be useful to reproduce. Under the influence of a slight elevation of temperature hydrate of chloral dissolves in oil in all proportions, and in the cold 3 parts of oil dissolve 2 parts of chloral hydrate:—

Chloral Liniment:

Hydrate of chloral - - -	6 parts.
Oil of sweet almonds - - -	30 „

Rub together in a mortar, or assist the solution by gently heating the mixture over a water-bath.

Chloral Ointment:

Hydrate of chloral	-	-	-	6	parts.
Lard - -	-	-	-	27	„
White wax	-	-	-	3	„

Melt together, having previously powdered the chloral. The wax is not indispensable, and may be omitted, unless a very firm ointment be desired. Equal parts of wax and chloral yield a mass of the consistence of plaster.

Suppositories may also be prepared with white wax and cacao butter, containing 1 part of chloral in 5, or even 1 part in 3.

Cutaneous Eruptions caused by Chloral.—In *La France Médicale*, Dr. Mayer records five cases in which the administration of chloral in affections of various nature was followed by definite symptoms in uniform order. These came on after eating, beginning with redness of the face, excited action of the heart, and dyspnœa. The erythema spreads to the neck; the palms and sometimes the soles being also affected. The eruption then appears on other parts of the body, and especially on the dorsal surface of the hands and wrists, the superior and anterior part of the thorax, the extensor surfaces of the knees and elbows, and the dorsum of the foot. It lasts from half an hour to a few hours, with itchiness of the part affected, and is followed the next day by slight desquamation. The spots are of a deep rose colour, are sometimes slightly elevated, and have sometimes a sinuous border.—(*Med. and Surg. Rep.*, May, 1879.)

4. *On the Influence of the Poisonous Solanaceæ.*—M. Heckel has experimentally studied the conditions under which is realised the remarkable immunity, already known but as yet unexplained, which certain vertebrates enjoy in regard to the poisonous solanaceæ. The immunity of rodents in general, and especially of the rabbit and guinea-pig relative to belladonna, has been long known, but M. Heckel has set himself to experiment on several varieties of the common rat, not only with atropa belladonna, but also with hyoscyamus niger and H. albus, as well as datura stramonium and D. tatula. From his observations, M. Heckel concludes that the rabbit and guinea-pig may readily be fed with the leaves and even with the roots of the above-mentioned toxic solanaceæ without injury,

and that for a very long period, and that the rat also is very tolerant of the introduction of these plants into its ordinary diet. As for the rabbit and guinea-pig the immunity is so marked that he has brought up several generations, and caused them to breed while feeding them during the fine season exclusively on fresh hyoscyamus, belladonna, and datura, and during winter on bran mixed with half its weight of the powdered leaves or roots. If the experiment be commenced on a young adult, it does not pass suddenly to the new *régime* without some ill effects, for it emaciates at first to a sensible degree; but soon (in seven or eight days) tolerance is established, and the animal regains all the characters of perfect health. In this case neither belladonna nor hyoscyamus, whose alkaloids are mydriatic, determine dilatation of the pupil. Young rabbits and guinea-pigs, on the contrary, which have been submitted from their birth to an exclusively solanaceous diet, not only suffer no harm, but even languish when suddenly transferred to the usual food, and they never exhibit mydriasis. So far back as 1868 and 1869, in the course of a voyage to Australia, M. Heckel had ascertained the perfect harmlessness of belladonna added in powder to the bananas and mangoes which form the sustenance of a kangaroo (*Halmaturus Bittardieri*) and of other marsupials. M. Heckel has further endeavoured to determine up to what dose the alkaloids of the solanaceæ may be given to rodents without betraying their presence by any symptom, at what precise time their ingestion reveals itself, and, finally, what becomes of these alkaloids, according to the amount which has been introduced into the economy. Rabbits which had been kept free from solanaceous diet were much more readily affected by atropia or its sulphate. Atropia could be detected in the urine when the dose of alkaloid was not less than 7 grs. in the day, but simple feeding on belladonna leaves, corresponding on an average to between 2 and 3 grs. of atropia per diem, never gave any indication of the presence of that alkaloid in the urine. From his varied experiments, M. Heckel draws the two following conclusions:—

1. In animals refractory to the poisonous solanaceæ the quantity of alkaloid introduced with the food, never a large amount, is destroyed in the torrent of the circulation as fast as it is absorbed.

2. The elimination of the alkaloid by the kidneys does not begin until after the quantity suddenly introduced into the circulation passes 7 grs. With this dose destruction does not keep pace with absorption, and the alkaloid, after having manifested its presence

by its proper physiological action, is rapidly eliminated in the free state by the excreting organs.—(*Rép. de Pharm.*, Juin, 1879.)

[*Cf.* Report in *Dubl. Quart. Journ.*, Aug., 1869, in which a number of facts were collated as instances of how differently vegetable poisons act on the lower animals and on man, and as illustrations of the caution required in conducting physiological inquiries or deducing therapeutical conclusions from experiments on inferior animals.—*Rep.*]

TREATMENT OF ECLAMPSIA WITH VERATRUM VIRIDE.

In a paper in the October number of the *New York Medical Journal*, Dr. Kenyon directs attention to the physiological and therapeutical properties of veratrum viride, with especial reference to its applicability to the treatment of eclampsia. He shows that, as regards its therapeutic action, either the fluid extract or the tincture of veratrum viride represents the sum of the action of its alkaloids. When taken, the drug is quickly absorbed, and enters the circulation rapidly. It enters the vasa vasorum and through them impairs the sensibility of the vasomotor nerves, the blood-vessels thus losing their tonicity and power of contraction. It has no direct action on the brain, but is a spinal motor depressant, by its physiological action on the vasomotor nerves. Through this depressant effect on the spinal cord the muscles lose their irritability, and do not readily contract under nervous or galvanic stimulation. Its effect is closely analogous in many respects to that obtained by Claude Bernard by dividing the sympathetic. Proceeding then to a consideration of the symptoms of eclampsia, he concludes that puerperal convulsion is an acute neurosis of motility, characterised by general tonic and clonic spasm of the muscles, with temporary removal of consciousness and reflex irritability. These convulsions have their immediate cause in an hyperæsthesia, an excessive impressibility of the motor system of nerves, induced by pregnancy and increased by the parturient process, and which is due to the accumulation in the blood of certain noxious and effete matters normally excreted by the kidneys. Having arrived at this conclusion, he is of opinion that in veratrum viride we possess an agent that not only has the power to control muscular spasm by overcoming this acute degree of reflex irritability, but at the same time by its action tends to reopen the avenues of elimination, either by counteracting the effects of the uræmic accumulation on the nerve-centres, and thus facilitating the action of diuretics and diaphoretics, or by itself acting directly as a detergent. He gives the history of two cases of puerperal convulsions in which this plan of treatment was successful.

PART IV.

MEDICAL MISCELLANY.

Reports, Transactions, and Scientific Intelligence.

TRANSACTIONS OF THE MEDICAL SOCIETY OF THE COLLEGE OF PHYSICIANS.

SESSION 1879-80.

HENRY H. HEAD, M.D., President.
GEORGE F. DUFFEY, M.D., Honorary Secretary.

First Meeting.—Wednesday, November 5, 1879.

DR. GORDON in the Chair.

Multiple Diffuse Papilloma of the Skin.

DR. WALTER SMITH introduced a patient suffering from diffuse papilloma of the skin, and described the morbid condition. The man applied for relief at the Adelaide Hospital. His legs were covered with large warty, bossy growths, on the summit of which were what seemed to be brown dried crusts. These crusts were so like the dry adherent remains of a linseed meal poultice, that Dr. Smith attempted to pick them off; but in doing so such free venous bleeding came on that he was obliged to put the man on his back and raise the limb in order to stop it. He was also affected with a slight degree of ichthyosis on the knees, legs, and feet. Four months ago he began to suffer from some irritation of the legs, and the excrescences grew gradually until they reached their present dimensions. On the insides of his thighs were several nodules like ordinary warts. The growths had in some places a condylomatous appearance, but upon inquiry there were no grounds for supposing that the man had had syphilis. The enormous cork-like masses on his right leg had a feel which was suggestive of fluctuation, but there was no fluid underneath, nor was there any discharge of matter. As to the nature of the case, at first he could not recollect anything similar to it. He had had photographs of it taken by Millard and Robinson in order to show the characteristics of the disease. He had in several cases seen warty eczematous growth (*eczema verrucosum*), and it occurred to him that this case might belong to the group of affections denoted by the term frambœsia. That term, however, had been very loosely used by derma-

tologists, and it was time to give it up. One of Alibert's plates before them contained a figure of the frambœsia of the West Indies. The back of the head of the patient in the plate showed a condition of raspberry-like fungoid growths like those on the leg of the patient exhibited. In conclusion, Dr. Smith thought that the condition on the skin of his patient was an exaggerated growth of warts, a development of papillose growths on the skin—in fact, multiple diffuse papilloma of the skin. He would refer to the remarks of Kaposi[a] on frambœsia:—"It would not, however, escape the attention of physicians that, occasionally, excrescences resembling those of frambœsia (raspberry- or strawberry-like, weeping, ulcerated, red, papillary, and having fungoid granulations on the surface) are seen on the skin, and may persist for months and years, under circumstances which contra-indicate the diagnosis of syphilis." Several such cases have been lately recorded by Köbner, Bazin, Virchow, Meyer, and by Kaposi himself.

Dr. Walter Smith read a paper on "Cases of Favus." [It will be found at p. 450.]

Drs. M'Veagh and Grimshaw alluded to some cases of favus they had seen.

Dr. Walter Smith said they could not be too careful about diagnosing favus without the use of the microscope. In the cases which he had related he did not use any internal treatment.

Dr. C. F. Moore mentioned an instance which occurred some years ago of a cat catching mice, on the bodies of which were spots of favus. The cat got the favus on the paws. She had a kitten, which also got the disease, became blind, and died. The cat recovered. There were two children in the house who also got the favus.

A Case of Bright's Disease, with a few Remarks on the Treatment, including the Question of the use of Mercury in certain Stages of the Affection. By Henry Kennedy, A.B., M.B.; Physician to the Whitworth (Drumcondra) and Simpson's Hospitals.

The following case I have been induced to bring under the notice of the Society, because it afforded an example of a mode of treatment in certain cases of Bright's disease which I adopted many years since, and which I believe worthy of more notice than it has hitherto received. It is, however, anything but my intention to enter here at any length into the subject of Bright's, or granular, disease of the kidneys; so that anything I have now to offer will certainly be very brief, and, in the strictest sense of the term, cursory. Before making any remarks on the subject, probably a sketch of the case on which they are founded will not be out of place.

[a] Hebra on Diseases of the Skin. Vol. III., p. 169.

Case.—Miss ——, a lady above fifty years of age, came under my care just sixteen months since. Her aspect at once indicated that something was seriously wrong. Her face was pallid and slightly bloated, particularly under the eyes, and her legs were swollen to the knees, and pitted on pressure. She said she had been told she had Bright's disease, and when the urine was tested it was found to present about one-fourth of albumen, at the same time that the specific gravity was 1015. No tube-casts were visible. She told me she had been out of health for a very considerable period, and was seldom, if ever, free from pain across the back. The immediate cause of my being sent for was irritability of the stomach; and for the few previous days she had thrown up her meals, and, as she said, with little or no stomach sickness. The vomiting, in fact, seemed a very sudden act, and tea was sure to cause it. After some treatment, of which I will speak further on, the sickness ceased, and, with the other symptoms getting better, she was advised change of air, and she went to Bray, where the change and tepid shower baths proved very useful, and she returned to town close to last Christmas a very much improved woman. It is to be noted here that, on her return, the amount of albumen was found to have materially lessened. It was still there, however, though in diminished quantity. So matters went on till early in the present year, when the swellings in both the face and legs began to reappear. With these she had now headache of a very persistent character, and accompanied by vomiting, just like what occurred before. Then the pupils became dilated, and serous effusion took place under the conjunctiva; and, finally, in spite of any treatment adopted, she was seized with convulsions, during which she bit her tongue severely; between them she was unconscious. In this state I had recourse to the treatment which it is the chief object of these brief remarks to bring under notice, and with a success which was very gratifying, for in the course of six days the fits and vomiting ceased, and the patient rapidly and steadily improved otherwise, and finally was able to go to Bray, where she has now been for the last five months, enjoying a state of health to which she was long a stranger. She is not, of course, cured, though she thinks so herself, nor is the case given with the slightest idea that such could be the result. But she is undoubtedly in a better state of health than she has been ever since she became an invalid. How long she will remain so it is not possible to foresee.

Such are the details of the case which I wished to bring under your notice, and about which I would now make a few brief remarks. In the first place, I would notice the variations which occurred in the amount of albumen present. The quantity, as you may recollect, varied from time to time. When I was attached to Sir P. Dun's Hospital, some years since, I was struck with the same fact, and at first was quite unable to account for it. I believe now that the explanation of the fact

lies in this: that with the permanent amount of albumen in the urine—and this is, of course, the sort of case of which I am now speaking—there is superadded more albumen, which must be considered as arising from functional derangement. We know, as a fact, that the latter state is capable of causing albumen to appear in the urine, and this without any permanent disease of the kidney; and the appearance of more albumen than the state of the kidney would account for may, I consider, be very fairly explained by the hypothesis I have advanced. It is very probable it may have been suggested by others, though I am not aware of it. At any rate it explains, or seems to explain, some points with which you are, no doubt, all familiar. Thus certain medicines have been recommended in a curative point of view for Bright's disease. The late Dr. Lees spoke of iron in this way, and, if I recollect rightly, Sir Dominic Corrigan has strongly advocated the use of the hydriodate of potash with a similar object. Now, in my own hands both these medicines have proved very beneficial; but I believe the benefit arose, not from the disease of the kidney being removed, but from the functional state being cured. Hence, the diminution in the amount of albumen, which often occurs under the influence of these and, I may add, other remedies. In my own hands I have found two other medicines effect the same result; one gallic acid, and the other sarsaparilla, given in the form of powder for the sake of economy; nor have I any doubt that there are other remedies would do the same. It will be observed that all these may be classed under the head of tonics, just as change of air would be, and their action is to improve the general health, and so that portion of the albumen which I have called functional is removed. In some of the latest works on diseases of the kidney into which I have looked, I observe that they speak of instances of Bright's disease being cured; but I am not able to give the details of any single case which would satisfy me that a perfect cure had been accomplished. All that had been gained was a great reduction in the amount of albumen, and a corresponding improvement in the health of the patient. But there still remained a notable amount of albumen depending on organic disease, and this it is which our remedies do not reach; and when in future we hear of so much being effected in Bright's disease, the view which has been just advanced is the proper one to take of the subject, and should, I believe, be the guide to our treatment.

A second point to which I would ask your attention is the vomiting which so often attends the disease. I know not whether others have found it as difficult to relieve as I have, but I do know that it is at times most distressing. It has often seemed to me as if there were the closest analogy between it and the vomiting of pregnancy, the stomach being involved purely by sympathetic relations with the organ really diseased. But in cases of Bright's disease there is this further to be observed—that

the patient is seldom if ever free from some form of dyspepsia, which must add to the difficulty of treating the vomiting when it occurs. We know that morning sickness is very common, and I believe most of the works allude to the breath of the patient as being very peculiar and unpleasant. At any rate there are dyspeptic symptoms—I think I might say in every case—which must increase the tendency to vomiting. Now how is this to be relieved? Out of a number of medicines which I have used there are two or three which are always worthy of trial. I wish I could say they were fairly successful. One of these is calomba—not given in the ordinary way, but in large doses, and in the form of powder. At the present time the proper dose of this, as indeed of many other medicines, seems to have been completely changed, and certainly not for the better. Formerly half a drachm of the powder was considered a very moderate dose; now it is seldom, if ever, given in such a quantity; and yet to be really useful it should be given so, and it is often of marked benefit in the kind of vomiting of which I am speaking. A second medicine which is capable of allaying the vomiting is the sulphate of magnesia; but it is not in large doses it is to be used, but very small ones; ten grains are quite sufficient, repeated according to circumstances. I had read of the use of it as an anti-emetic, and so tried it. I consider now that its effects are increased by the addition of three to five drops of the dilute sulphuric acid in each dose. As a tonic, and when the system is in a reduced state, I have seen benefit arise from the use of two-drop doses of the liquor of strychnine of the British Pharmacopœia. It seems to bring the stomach, or, more correctly perhaps, the nervous system into a state which enables the stomach to bear what it would not otherwise do.

In addition to mere medicines benefit is frequently obtained by local applications over the stomach, or, better still, the loins. I believe that soothing remedies are better than what we understand as counter-irritants. Thus a large warm poultice, or the same sprinkled with laudanum, will often succeed in allaying the vomiting for the time. Where we have reason to suppose there is congestion of the kidneys dry cupping should precede the soothing plan. As regards diet, I have only one remark to make—that it should be as dry as possible, and, above all, warm drinks, such as tea, should be avoided. I have found this kind of diet of marked use, and it can be modified as the attack passes off, for these attacks have frequently long intervals between them.

In the last place I would ask attention to the stage of the disease where convulsions occur, or these alternated with a comatose state, of which the case given this evening was an example. When such came under my care some years ago I was led, or I should rather say forced, to adopt a plan which I am not aware has been carried out by any one else—if, indeed, it has even been noticed at all. I speak of the use of mercury, which, as you are all aware, was condemned by Bright himself, and has

been equally so by every writer since down to the late elaborate work of Dickinson. I have used the word "forced," because before I had recourse to it I had put in force every means I could think of to avert what was coming, and I had been taught like others to look upon mercury as entirely unsuited to the disease. With such feelings I need scarcely say I began its use with extreme caution, but I was agreeably surprised to find that it was not only borne comparatively well, but what was of very much more consequence, from the moment it showed its specific effects on the system the convulsions and coma ceased, and the patient recovered for the time being—the serous effusions also disappearing. Had I only the case given this evening to adduce in favour of the plan, it might fairly be questioned how far the treatment and the result stood to each other as cause and effect; but I have had other cases exactly similar, and the same result, and I think I may now speak with confidence on the point, and latterly I have been in the habit of anticipating, as it were, brain symptoms, and when I observed the pupils beginning to dilate, and more particularly when serum appeared under the conjunctiva, I have not hesitated to give a little mercury, believing it to be very much better treatment than what is at present taught in books. It is not of course given to the exclusion of other treatment, and more particularly purgatives, but it is used along with them. What I commonly order is a grain of grey powder three times a day, watching its effects; for it is certain that in these cases of granular kidney mercury acts with extraordinary effect and rapidity, and so requires close watching. In some of the cases, too, the mouth was slow in getting well; but it must be recollected that the patient was otherwise in a most dangerous state, and any inconvenience from the mercury was slight in comparison. That cases occur where we would not be justified in trying mercury is certain; for in some there is the clearest evidence that the entire mass of the blood is most seriously deteriorated. Here mercury would only make matters worse. But that there are many where it may be used, and with very satisfactory results, I take to be certain, and the case given this evening is an example in point. It is quite possible, too, that the time will come when mercury will be used in cases where the kidney is involved, but not of the same character as those of which I have been speaking.

I address probably few who have not met cases after scarlatina where there has been serious threatening of the kidney becoming permanently damaged. In such I would not now have the slightest hesitation in giving mercury, and, as I believe, with curative effect; but this is an idea which future experience alone can decide.

The Chairman said there was an important question as to the advisability of the administration of mercury in such cases. Dr. Kennedy had been very fortunate in being able to diagnose the nature of this case at so early a period. His (Chairman's) experience of the disease was

that granular disease of the kidney could rarely be diagnosed until it had gone to such a length as to defy treatment, and the consequence was that in nine out of ten cases it was rapidly fatal.

Dr. Purser asked what was the condition of the heart in Dr. Kennedy's patient. They should distinguish between the contracted granular kidney and the large kidney; and there was a question as to whether these were different phases of the same disease or distinct *ab initio*. Another point was as to the quantity of urine passed. In cases of contracted kidney the patient invariably passed large quantities. There were very few cases of well-pronounced granular disease of the kidneys in which the patient got epileptic attacks and afterwards recovered. He thought there was some doubt as to whether the present was a case of granular disease of the kidneys or not.

Dr. Walter Smith asked were any observations made as to the condition of the patient's eyes. He mentioned the case of a servant, who complained of headache, and of her eyesight failing her. On ophthalmoscopic examination it was ascertained that she had retinitis. Her urine was then found to be loaded with albumen, and she died in a state of coma from Bright's disease.

Dr. Fitzgerald said observations with the ophthalmoscope were valuable as a means of diagnosing Bright's disease at an early stage; but the instrument would not detect anything that would show the particular form of disease of the kidneys under which the patient laboured.

Dr. J. W. Moore said he was not satisfied as to the diagnosis of granular kidney in this case, both from the absence of any mention of the symptoms to which Dr. Purser had alluded, and from the presence of certain other symptoms. The patient was described as exceedingly pale. Except in advanced stages it was not the rule for those suffering from chronic interstitial nephritis to exhibit pallor. Again, this lady was anasarcous, which was not a common symptom. He had under his care in the Meath Hospital a case which he certainly regarded as one of chronic granular nephritis. The patient was an elderly man, who had been employed as a butler. He admitted that he had been of rather intemperate habits for several years. Some months ago he began to suffer from attacks of indigestion, and from time to time there was obstinate constipation. When his bowels were confined he had headache, dizziness, and dimness of vision. No ophthalmoscopic examination had been made, so it was impossible to state the exact condition of the eyes. Whenever the bowels were freed the unpleasant head symptoms disappeared. His pulse was strong and full. He also experienced extreme thirst, drank copiously, and passed large quantities of urine, which was pale, clear, of low specific gravity, and contained a small amount of albumen. Now, in the case described by Dr. Kennedy, the presence of considerable anasarca, the pallor of the patient, the

puffiness under her eyes, and the absence of any history of constipation, polyuria, or hypertrophy of the heart, led him to think that the form of renal disease under which she suffered was at least open to question.

Dr. Duffey observed that Dr. Kennedy had spoken of the variations in the quantity of albumen in the urine in his case, and had also spoken of placing the patient on dry diet. What did he mean by dry diet? Diet, no doubt, had a very important influence on the amount of albumen found in the urine in cases of Bright's disease. He (Dr. Duffey) had observed patients suffering from Bright's disease in whom the amount of albumen in the urine could be altered by the diet the patient got. Under a strict milk diet, the albumen—as shown in a case at present under his care—would disappear from the urine. But if such a patient got meat, or a nitrogenous diet, the albumen would probably reappear.

Dr. Kennedy having replied,

The Society adjourned.

FATTY EMBOLISM.

This form of embolism seems to be attaining some pathological as well as clinical importance from its occasional occurrence in diabetes, and its frequent occurrence where the continuity of bone is interrupted. Two cases illustrating the latter fact have recently been demonstrated by Professor Recklinghausen, and are related in the *Cincinnati Lancet and Clinic.* In the first case death occurred about forty-two hours after resection of the carious head of the femur. The patient, a healthy and well-nourished young man, had been doing well for the first twenty-four hours after the operation; he then suddenly grew worse, and died in collapse. Macroscopically, none of the organs or tissues presented anything abnormal, and it needed microscopical examination of the lungs to account for the sudden and unexpected death. In the second case, a man forty-nine years old, there existed a very extensive chronic endarteritis, with granular kidney, and an immense hypertrophy of the left ventricle. The disease of the arteries had led to the occlusion of both tibial arteries on one side, and dry gangrene had begun to appear, when the patient suddenly died with some symptoms of apnœa. The microscopical examination showed large masses of fat in the arteries and capillaries of the lung. According to the researches of Busch, fatty embolism of the lungs always occurs in greater or less degree where the continuity of bone is interrupted—hence, even in simple fractures. It is only in rare and severe cases, however, that the embolism is sufficient of itself to cause death.—*N. Y. Med. Record.* [In connexion with this subject reference may be made to an interesting article on "Fractures and Fatty Embola," in the *British Medical Journal* of Nov. 8, 1879, p. 740.—Ed., Periscope.]

PROCEEDINGS OF THE DUBLIN OBSTETRICAL SOCIETY.

FORTY-SECOND ANNUAL SESSION.

EDWARD B. SINCLAIR, A.M., M.D., President.
WILLIAM ROE, M.D., Honorary Secretary.

Saturday, November 22, 1879.

E. B. SINCLAIR, A.M., M.D., President, in the Chair.

President's Address.

GENTLEMEN,—You have heard the Report of the proceedings of our Society during the last session, the number and the description of the several papers that have been brought before it, the morbid specimens, and instruments that have been exhibited.

I think you will agree with me that the Society may be complimented, according to the Report, and that, on the whole, our last session was a successful one. All the published Reports of our Society for the most part reflect credit on its members. If there be not much originality in some of the papers produced, they are characterised, at least, by a clearness in description, a considerable amount of research, and the exhibition of much care and expenditure of time. Indeed the character of the papers, to me, is a matter of wonder, when it is considered all the authors have had to accomplish. In this country the members of our profession have not the opportunities and leisure for observation and research enjoyed by those elsewhere. We (with one or two exceptions) have none of the handsome endowments which enable those of other countries to devote nearly, if not all their time to investigation. Here we are all practitioners. The professors of our schools and the teachers in our hospitals have no imperial stipend; few of them have any emolument whatever, and, when they have, it is of such a miserable nature as to be of little avail. So that we have to enter upon the process of research after we have spent the most part of the twenty-four hours in endeavouring to obviate the *désagréments* of the "res angusta domi." This, and the anxiety and labour inseparable from what is called "getting on" in the profession, cannot but have pernicious influence upon original investigations; while those who have overcome this weary struggle are by that time in the "sere and yellow leaf," or nearly past their prime, while their practical avocations have become more and more pressing. Nevertheless,

we find in our Society senior and junior affording their contributions, and exhibiting in these contributions a wonderful amount, if not of original, at least of useful practical knowledge.

The finances of our Society are, I am happy to say, in a fair condition. We are not in debt, and have a balance at our bankers, but truth requires me to say, a small one only. It enables us, however, to print our Proceedings. We must endeavour to create a more flourishing exchequer. As usual, there is a considerable balance of arrears, some of which we hope to realise; if so, we shall be nearly rich, and shall have commenced to be in a position to accomplish something I shall presently suggest.

The attendance of Council has been regular and good, save in one instance. Your President has been deficient both at Council meetings and Society gatherings. It is necessary, therefore, to explain to the Society that this deficiency in duty was not altogether his fault; for scarcely had he recovered from the serious effects of a poisoned wound received at an operation than he had the misfortune to slip upon an urchin's "slide," and experience a Colles's fracture; and soon after his arm was out of the sling, he was, through the agency of the tramway, thrown off an outside car opposite the Post Office, and very nearly, as to his life, extinguished. These accidents had their good effects, however—they gave him an opportunity of studying medical and surgical science, and he on two occasions served as a subject for a clinical lecture to the able Professor of Surgery to the University of Dublin, his kind and skilful attendant and good friend. Last session, then, was a remarkable one for your President. But he has been inured to these accidents long since—so much so that some of his brethren have asserted him to resemble, to some extent, the celebrated cat whose history was detailed by the Rev. Professor Haughton at the breakfast given to the British Association by the Zoological Society, and one of his brother-fellows intends to try the effects of a gun upon him on some future occasion; therefore he has the prospect of enjoying another accident during this session.

It affords me much pleasure to state that the enemy we are all combating—but who in the end must overcome—has spared us during the last session. We have no member's death to lament, but disease at this moment casts a shadow over our present meeting. There is one who, were he in health, would be amongst us to-night, who was a constant attendant at our meetings—a member not the least remarkable amongst us for his learning, activity, cordiality, and enthusiasm: he lies upon a bed of sickness, where he has been struggling for a long time against an insidious and treacherous disease. I hope he is now on the road to recovery. I do trust that my brother-member and brother-fellow, Arthur Macan, may soon be amongst us again in his full mental and corporeal vigour. It must be conveyed to him that we missed him here to-night, and that the members of the Obstetrical Society wafted up a silent prayer that he might be spared to his family and to them.

And now a few words relative to the publication of our Reports. The susceptibilities of some of our members have been hurt by your Council using the pruning knife too freely, as they considered, with respect to the observations made upon the papers which formed the subject of discussion during the last session. I would suggest as a remedy against the recurrence of these unpleasant feelings that the printing of our conversations be discontinued altogether. Many men whose opinions would be worth having would shrink from giving them utterance did they know a reporter was present to take them down *verbatim* for publication. These conversations do very well in private conclave, but had better be omitted in our Reports. If utterance has been given to anything worthy of note, the Secretary can take a memorandum thereof on the minutes of the Society, and so the idea cannot be lost.

It has been told of an eminent extemporary preacher of this city (now no more) that he has often asserted he had, in the heat of oratory, given out sentences from the pulpit that afterwards he would have given worlds to be able to recall. In these observations, also, we find a great deal too much adulation. They have made our Reports sometimes ridiculous, as evidently appeared to one once our critic. This critic writes as follows:— "Throughout the book" (that is, one of our Reports) "we are treated to the desultory conversations which followed the recital of each paper on the night of meeting at which it was brought forward. How far the perusal of these usually trite, crude, and vapid remarks may tend to the improvement of the obstetric mind, is a question, to say the least of it, problematical. We find a member described as having risen 'to express his *sense* of the value of Dr. ——'s paper.' Another informs the Society that it is, or ought to be, 'greatly indebted to Dr. —— for his able paper, containing so full and complete a history,' &c., &c. 'For his own part, &c., Dr. —— fully concurs in the remarks of the learned author.' One calls another 'the most recent and one of the ablest *exponents* of the modern school of gynæcology;' and after paying each other compliments and purring together for some time, the most recent exponent of modern gynæcology rises *to return thanks* to the Society for having patted him on the back and stroked him down; and having patted all his brethren on their backs, who had previously caressed him, 'he resumes his seat,' and the Society adjourns. Surely," continues the writer, "all this rubbish might have been omitted. The Report contains thirty pages of it." The publication of these observations only serve as species of advertisements, and not either of the better class of such useful documents.

In connexion with this subject I would make another suggestion. The omission of all this would give room for more valuable matter in the pages of our Report. Are there not plenty amongst us who are able and willing to write on some abstract subject connected with obstetricity or

gynæco-nosology? There would then be room for such in our Report. Could we not institute a prize fund—"where there's a will there's a way?" Could we not collect amongst us £50, to be given to the author of the best dissertation of the session? Let such prize be contended for by our junior members only. But this is matter of detail. I should like to see this prize established, that Dr. Evory Kennedy should give the subject for the first competition, and that the prizes should be named "The Evory Kennedy Prize"—thus identifying his name with the Dublin Obstetrical Society as long as it may exist. Does not our founder deserve such a distinction? Gentlemen, we must try and accomplish this. And no doubt we could do so. It is also to be remembered that a £50 note coming to a young practitioner just at Christmas time will not render that joyous season less joyous.

I shall reserve any matters of a purely professional nature for other occasions. I have no observations to offer upon the papers of last session, and every subject capable of forming a theme for an address has been ably handled at former opening meetings. It would, therefore, be presumptuous in me attempting to compete with my predecessors. It is my intention as soon as possible to render an account of my guardianship of a child of my own—Sir P. Dun's Maternity. I have about 7,000 cases on record from which to arrive at results. Many here are aware that these cannot be arranged so as to get at the results of the practice employed in a hurry. I also hope to lay before you hereafter some observations upon the present state of gynæco-nosology. To-night my address is not to be of a technical nature.

This is the forty-second anniversary of the Dublin Obstetrical Society. Born in the Rotunda Hospital, Great Britain-street, it for a long time dwelt in one of the public rooms of that institution, and was for a considerable time (taking various matters into consideration) too much, perhaps, under the influence and control of its alumni. This has been changed, as well as its residence, and now we find it "located" (as our cousins would say) in—of all places in the world—the Hall of the King and Queen's College of Physicians—a fine strong man, in the prime of life; and, what is most interesting, the parent is as vigorous as the son. Proud he is, and proud he ought to be of his child.

Dr. Evory Kennedy, our founder, knew well what he was doing when he instituted the Dublin Obstetrical Society. He was advancing obstetric medicine as far as he could then do towards the present position it holds, and his example was followed in the sister kingdom by the establishment of kindred societies—for *we* were the first of the kind instituted. He says:—"When I bring to your recollection the position occupied by our branch of the profession in bygone times—nay, when I recollect what occurred more nearly approaching to our own day, and that although a Baudelocque, a Mounceau, a Denman, a Hamilton, a Fielding Ould, and

a M'Bride, an Evory, and a Joseph Clark, stood out in bold relief and asserted by the force of their talents and writings an individual respect and admiration, yet the gynæcologist *held a mere toleration in the profession at large*—when, I say, I bear these facts in mind, and look around me in this great Society at the mass of talent, energy, deep thought, industry, and successful research with which I am this moment surrounded, I may say, with truth and satisfaction, that I wonder with exceeding amazement at the position we have established and justly occupy as a body at the present day." Now, there is reason why I should take this quotation as my text to-night. For the information of members of this Society who are not acquainted with the former disabilities attached to our branch of the profession, I bring before it to-night matters known to our seniors, but they, I am sure, will excuse me. From my observations many ignorant of all we had to contend against will understand Dr. E. Kennedy's meaning.

On the 2nd of May, 1715, the King and Queen's College of Physicians passed the following order:—"That no member of the College do consult with Mr. C. Walker, the man midwife, unless as to whatever appertains to the delivery of women." Again, on the 21st of February, 1736, they resolved:—"That no *man* (*sic*) for the future shall have a licence to practise Midwifery and Physic together; and that whosoever, after obtaining a licence from the College to practise either separately, shall, notwithstanding, presume to practise both, his licence shall *ipso facto*, be null and void; and that if any Fellow of this College shall consult with anybody so disqualified he shall be punished ten shillings for each consultation." Now, members of the College did not hesitate themselves to attend and give obstetrical advice during cases of labour. It may be asked how did they possibly do their duty to the public under such circumstances? How, thus ignoring Obstetric Medicine, did they examine and license candidates for the practice of Midwifery? Yet they did so.[a] They made their rules in such a way that when they were called in to a case of labour, they gave their advice and pocketed their fee (whether the advice was worth the fee or not is another question), but when any medical point arose in the treatment of the case, they took it all to themselves. They examined for licences in Midwifery, and granted those licences, and yet they felt it would degrade them to be obstetricians.

In the records of the College we find the following note, dated the 16th of May, 1738:—"That Mr. Fielding Ould was examined for a licence to practise Midwifery, and being found singularly well qualified was licensed accordingly." This Mr. Fielding Ould was the second master of the Dublin Lying-in Hospital, being the successor in that position of the

[a] It strikes one with wonder that our MODERN Medical Parliament recently sent to inspect the examination of the College of Physicians for their licence in Midwifery two gentlemen equally ignorant of Obstetric Medicine.

celebrated Bartholomew Moss, its founder, the advantages of whose great labour, energy, and capacity he reaped. Poor Moss was allowed to die almost in penury, while Ould profited by all the work that he had done. Moss has left his monument, however, in Rutland-square. Fielding Ould published a book and sent it to the College of Physicians for their sanction: and on the 5th of December, 1741, that learned body, not one of whom would deign to be an obstetrician, yet who examined in "Obstetric Medicine," gave the work their sanction in the following terms:—"Librum cui titulus (*A Treatise of Midwifery*) dignum censemus qui imprimatur."

They knew much about it! Fortunately, on this occasion, they were in the right. This was the first class-book on Midwifery ever published in Dublin, and it contains many admirable remarks on the subjects upon which it treats. It is to this great man—afterwards Sir Fielding Ould—that we are primarily indebted for the position we now occupy in connexion with our two elder sisters, Medicine and Surgery. Sixteen years elapsed after Ould was licensed, when the College published the following order, which proves that there was "something in the wind" about which they were alarmed. On the 19th of February, 1753, we find the following in their minute-book: "That the College of Physicians shall not for the future examine any person WHO HATH or does practise Midwifery, for any degree in Physic or licence in Physic." That was a bar to Ould at once. He might have given up obstetrics, but he *had* practised it; he had been contaminated. Ould at this time had no intention of giving up Obstetric Medicine: he was trying to get in the thin end of the wedge by seeking to be examined for the licence of the College. There are a few words in this order which it is necessary to explain—viz., "for any degree in physic." The College of Physicians of that day used to examine for the degrees in Physic given by our University. It is unnecessary for me to quote all the extracts from their minutes which bear upon this question; suffice it to say that after very many "solemn meetings"—forty or fifty, I think, if not more—and after several conferences between the College of Physicians and the Board of this University, an agreement was arrived at—viz., that the Board of the University should send their graduates with a *liceat* to the College of Physicians, who, having examined them, should, if they found them fit for degrees in Medicine, send them back to the University where they would receive the degrees accordingly.

Now, just at this time, when these matters were going on, Ould had evidently sent in a direct application to the College of Physicians with a remonstrance; for we find on their minutes of the 15th November, 1756, the following notice:—"A remonstrance"— and then there follows some word I cannot make out—"and unjustly reflecting on the College of Physicians, being presented to the President by Mr. Fielding Ould, and

this day taken into consideration, it is the unanimous opinion of the College that the Registrar do send him a copy of the by-law of March, 1748, and the resolutions pursuant thereto relating to the Licentiate in Midwifery, as the only answer which they can, consistent with the dignity of their body, give to a memorial of such a nature;" worded, of course, in a most offensive way. The Board of our University, however, now took the matter into their own hands, and placed Sir Fielding Ould under their protection. Ould, who was a most accomplished scholar, and had spent a great deal of his time in the Continental schools, was given a degree in arts *speciali gratiâ* by the Board of Trinity College; and, armed with it, and with a *liceat* from the Board, he presented himself to the College of Physicians for examination. The following was the result:—"October 29th, 1759, Mr. Ould, Licentiate in Midwifery, having presented a *liceat* from the University of Dublin to be examined for a Bachelor's degree in Physic, the College is unanimous in not admitting him to an examination, as such an admission is contrary to their laws." The Board of Trinity College were, however, equal to the occasion, for the following resolution appears, as I am informed, in their Registry:—"Trinity College, February 2nd, 1760. This day a memorial of Fielding Ould, A.B., was read, setting forth that he had presented the *liceat* granted by this Board for his Bachelor's degree in Physic to the President of the College of Physicians, and offered himself ready and willing to undergo their examination, and praying that as they had declined examining him, he might obtain leave to perform the usual acts for his Bachelor's degree in Physic. Ordered by the Board that Fielding Ould, A.B., have leave to perform the usual acts for a Bachelor's degree in Physic, and that he acquaint the Professor of Physic therewith, and that he give the usual notice of the time and subject of his acts." The degree of M.D. was accordingly conferred upon Ould. This of course raised the ire of the College of Physicians, who sent to the Provost of Trinity College the following letter, on the 5th February, 1761:—"Sir,—The President and Fellows of the College of Physicians, from their affection for the Society in which they were educated, have, for three score years past, submitted to considerable inconvenience, solely to give credit and value to the degrees in Physic conferred by the University at the head of which you have the honour to be placed. They lament that, of late, their endeavours have been ineffectual to this purpose, and are justly apprehensive that they are likely to continue so. As your College has thought proper to grant a degree in our Faculty to a person who has had no Academic education, and whom you know to be disqualified by his *occuption* (*sic*) for a licence to practice in our profession, we therefore, from the attention which we owe to the welfare of the public, and to the reputation and dignity of our own body, find ourselves under the necessity of breaking off that communication which has hitherto subsisted between your Board and

ours, by the agreement of July the 25th, 1701; and we do hereby declare that, for the future, we will not examine your Candidates, nor officiate at the performance of their Public Acts; and that we will receive into our College Graduates of other Universities, if sufficiently recommended by their learning and morals, though not admitted *ad eundem* into yours." The following resolution was added to the letter, and also entered on their minutes:—"College of Physicians, February the 8th, 1761.—Resolved unanimously, that the College of Dublin, in conferring a degree in Physic on Sir F. Ould, Licentiate in Midwifery only, has treated this College with very great and undeserved disrespect."

I shall not weary you with any more extracts from the minutes of this body, but merely state that the intimate connexion between the University of Dublin and the College of Physicians, which was then severed, has never been so completely re-established since. This shows us, who devote most of our time to the practice of Midwifery, that if ever we had an enemy in our early career it was the King and Queen's College of Physicians, and that if ever we had a champion then, it was the Board of the University of Dublin—our champion still. The admission of Ould to the degree of Midwifery was the first great act on the part of that Board to press forward the obstetrician and obstetric medicine.

It would be an injustice to my College, however, were I not to state that in later years they have done everything in their power to advance Obstetric Medicine. We have had obstetric disabilities, we have obstetric emancipation. The old prejudice against its professors and practitioners has, years since, given way. It has admitted Midwifery practitioners to its licence and to its fellowship. It has endowed a King's Professorship of Midwifery, and has placed obstetric practitioners in their presidential chair.

Now, however, comes the last and crowning act for the advancement of our loved department. Taking into consideration the advanced condition of science at the present day in all departments, the Professors in the School of Physic requested that a degree in Obstetric Medicine should be granted by our Dublin University. The Board of the University were willing to grant licences, but felt some disinclination to granting a degree, and they sent a communication inquiring why the Professors preferred a degree to a licence as the qualification for a Practitioner in Midwifery. The Professors sent the following reply, which is very short, and worth preserving on our records, if only for the honour of my brethren:—

"At a meeting of the Professors held on the 24th of April, 1876, it was resolved, that the Professors are still of opinion that a degree should be granted in Midwifery by the University, and not a licence only, for the following reasons:—1. The granting of a licence in Midwifery to Graduates in Arts would be inconsistent with the practice of the

University in the case of Medicine and Surgery, in which degrees are given to Graduates in Arts, and licences to Non-Graduates. 2. The granting of a licence only would not be acceptable to our Graduates, who would prefer proceeding to other institutions, where they could obtain a licence in Midwifery equally valuable, and on easier terms. 3. The granting of a degree in Obstetric Medicine and Surgery by the University of Dublin, upon an extended curriculum and examination (including embryology), would place that University in the front rank of medical teaching bodies, by anticipating a step that must be shortly made by other Universities, in consequence of the high position which Obstetric Medicine and Surgery have obtained within the present century. 4. The Professors do not object to a licence in Midwifery to be conferred on Non-Graduates who are Licentiates in Medicine and Surgery, but they again earnestly urge the creation of a degree in Obstetric Medicine and Surgery, to be conferred on Graduates in Medicine and Surgery who are of necessity also Graduates in Arts. 5. The Medical Registrar has informed the Professors that the total number of Licentiates in Medicine (Non-Graduates in Arts) is under *thirty*, and that the total number of Licentiates in Surgery (Non-Graduates in Arts) is under *ten*.

"These significant figures show how unattractive licences are to students who can obtain degrees guaranteeing a high qualification in Arts, as well as professional qualification. To understand the significance of these figures, it must be borne in mind that the corresponding degrees in Medicine were upwards of 970, and the corresponding degrees in Surgery upwards of 160. Signed, William Stokes, Regius Professor of Physic; Samuel Haughton, Medical Registrar."

The degree of *Magister in Arte Obstetriciâ* was at once granted. Thus, by a touch of her magic wand, our *Alma Mater* has thrown around poor Cinderella a glorious robe, and lifted her from her low estate to a position of social equality with her two imperious sisters.

This most gracious and enlightened act on the part of the Board entitles them to our gratitude generally. They have been the first in the race of enlightenment in this direction, and I have no doubt that their example will be followed by other universities. I have to return my grateful acknowledgments to the Board of Trinity College—to tender my most cordial and hearty thanks. Should not our Society do the same?

Need I an apology for bringing this forward? Ought not the history of our obstetric degree be recorded in the Reports of this Society? Dr. Evory Kennedy has lived to see the consummation of our emancipation. He has taken his share in bringing this to pass. But the professors of the School of Physic in the University of Dublin have obtained all that obstetricians still required from the enlightened Board of Trinity College; and an influence pervaded all—not the least important—that of our former Medical Registrar, the Rev. Dr. Haughton.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, M.D., F.K.Q.C.P.

Vital Statistics

Of Eight Large Towns in Ireland, for Four Weeks ending Saturday, November 1, 1879.

Towns	Population in 1871	Births Registered	Deaths Registered	Deaths from Zymotic Diseases							Annual Rate of Mortality per 1,000 Inhabitants
				Smallpox	Measles	Scarlet Fever	Diphtheria	Whooping Cough	Fever	Diarrhœa	
Dublin, -	314,666	691	751	29	22	37	10	3	13	16	31·1
Belfast, -	182,082	523	337	—	8	—	2	10	14	15	24·0
Cork, -	91,965	211	168	—	6	18	—	—	3	7	23·8
Limerick, -	44,209	83	51	—	—	2	—	1	1	1	15·0
Derry, -	30,884	57	37	—	—	—	—	—	1	—	15·8
Waterford, -	30,626	54	45	—	—	—	—	—	1	1	19·0
Galway, -	19,692	29	31	—	—	—	1	—	2	—	20·5
Sligo, -	17,285	31	23	—	—	—	—	—	1	1	17·3

Remarks.

An extremely high death-rate prevailed in Dublin. In Belfast and Cork also the mortality was rather high, but in the other towns it was moderate or low. In London it was at the rate of 21·4 per 1,000 of the population annually; in Edinburgh, 17·7; in Glasgow, 16·7; in the Dublin registration district (omitting the deaths of persons admitted into public institutions from outside the district), 30·3; and within the municipal boundary of Dublin, 34·3. In Dublin zymotic diseases killed 163 persons, compared with an average of 135·5 in the corresponding period of the previous 10 years. Scarlatina, smallpox, and measles were especially fatal. Of the 13 deaths ascribed to fever, 5 were returned as due to typhus, 6 as due to enteric, and 2 as due to "simple continued" (*i.e.*, continued fever of undetermined type). Scarlatina shows some diminution in Cork, but the deaths from measles in that city have increased. Fever, measles, and whooping-cough are prevalent and fatal in Belfast. On November 1 the number of smallpox patients under treatment in the Dublin hospitals was 88, compared with 69 on October 4, 55 on September 6, and 40 on August 9. In Dublin the deaths from

affections of the organs of respiration amounted to 128, the previous ten years' average being 86·9. They included 96 from bronchitis (average = 63·1) and 13 from pneumonia (average=14·4).

Meteorology.

Abstract of Observations made at Dublin, Lat. 53° 20′ *N., Long.* 6° 15′ *W., for the Month of October*, 1879.

Mean Height of Barometer,	30·148 inches.
Maximal Height of Barometer (on 12th at 11 a.m.),	30·578 ,,
Minimal Height of Barometer (on 19th at 9 p.m.),	29·377 ,,
Mean Dry-bulb Temperature,	49·5°
Mean Wet-bulb Temperature,	47·8°
Mean Dew-point Temperature,	46·0°
Mean Elastic Force (Tension) of Aqueous Vapour,	·315 inch.
Mean Humidity,	88·4 per cent.
Highest Temperature in Shade (on 5th),	60·3°
Lowest Temperature in Shade (on 16th),	36·1°
Lowest Temperature on Grass (Radiation) (on 26th),	31·2°
Mean Amount of Cloud,	73·3 per cent.
Rainfall (on 14 days),	1·320 inches.
General Direction of Wind,	W.N.W. & E.N.E.

Remarks.

A month of dull, generally mild weather, with a scanty and infrequent rainfall for October, which is usually the wettest month of the year in Dublin. Atmospherical pressure was very high, and there were two anticyclonic periods. The first of these commenced on the 3rd, when an area of high barometer overspread the country from S.W. This system was remarkably persistent, and did not break up finally until the 14th. In Dublin the barometer stood uninterruptedly above 30·50 inches from the afternoon of the 7th to the early morning of the 13th. At 11 a.m. of Sunday, the 12th, the reading was 30·578 inches. The calm state of the atmosphere attending the anticyclone caused a considerable fall of temperature. The air consequently became saturated with moisture, and extraordinarily heavy dews and wet fogs prevailed on the 6th and following days, yielding appreciable amounts of water in the rain gauges. On the 14th a bourrasque passed southwards down the North Sea, bringing in its wake a rapid fall of temperature, and bright dry weather on the 15th and 16th. Changeable and cloudy but mild weather supervened, and lasted until the 23rd, at 9 p.m. of which day the thermometer stood as high as 57·2° in the open air in Dublin. On the evening of the 25th there was a hoar-frost, but a few hours later a rapid rise of the barometer in the north caused an easterly gale and heavy rainfall in the Irish Sea and on the east coast of Ireland. Thunder, lightning, and hail

occurred in Dublin, where seven-tenths of an inch of rain—that is, half the rainfall for the whole month—fell in a few hours. Another anti-cyclone now formed, and the last days of the month were characterised by easterly winds and dull but otherwise fine weather. In addition to the thunderstorm on the 26th, thunder was heard at 3.30 p.m. of the 2nd, when also hail and sleety rain fell. There were fogs on the 4th, 6th, 7th, 8th, 9th, 11th, 25th, 27th, and 28th. The average amount of cloud was much greater at 9 a.m. (80·0 per cent.) than at 9 p.m. (66·5 per cent.).

PERISCOPE.

Edited by G. F. Duffey, M.D., F.K.Q.C.P.

THE "SEDATIVE" DOSE OF CALOMEL.

A Committee of the Therapeutical Society of New York have presented a provisional report on the above subject, which has been reprinted from the June and July numbers of the *N. Y. Medical Journal*. The able analysis of this report—which is based on 50 cases presented to the Committee—is by Dr. Putnam Jacobi. Of the 50 cases of the various diseases reported, the net result was 41 recoveries and 9 deaths. The list of cases is rather a heterogeneous one—ranging from a sprained ankle to an acute encephalitis. It includes 20 cases of pneumonia. As far as may be inferred from the reports, the administration of the calomel was directed against the symptoms either of dyspnœa or of fever, or of restlessness with insomnia. The anatomical conditions existing at the time of administration were extremely various. They may be summed up as: inflammation—simple, traumatic, or zymotic; congestion, from vasomotor paralysis, either febrile or dependent on organic, cardiac, or renal disease; finally, serous effusions, in all cases into the pleura, in consequence of such organic disease. The relief to dyspnœa in the pyretic cases was not due to a "sedation" of pulse or temperature, even when it coincided with them, since as great relief was obtained when such sedation was not required; it must therefore have depended upon some influence exerted on the distended pulmonary blood-vessels, the only condition common to all the cases of dyspnœa which were relieved, apyretic as well as febrile. In five of the cases where the calomel was given on account of nervous symptoms, either extreme restlessness, insomnia, or delirium, the patient was watched, and the soothing result noted as occurring in an hour. The same where the action of the heart was tumultuous. The purgative effect of calomel was produced in some cases, but in various degrees. The number of passages varied from two to eight. In no case was there any hypercatharsis. As a purgative,

the heroic doses of 30 or 80 grains, given in some of the cases reported, seemed to differ little from the ordinary five- or ten-grain dose habitually given as a purgative. There is no such proportion between the dose and the effect on the intestine as exists in the case of directly irritant purgatives. The inference is that the calomel—administered in this way, at least—does not act directly upon the intestinal canal, but only by elimination after previous absorption, and circulation in all the tissues of the body. As bearing upon this point, the reporter adduces an observation of a case which shows:—1. That five grains of calomel, an ordinary purgative dose when taken into the stomach, failed to act as such when rubbed into the tongue. 2. That 10 grains, or 15 grains in two doses, taken upon the tongue, produced as much purgation as was noticed in a large number of cases after 20, 30, or 40 grains. 3. That the purgation was not due to direct contact of the calomel with the mucous membrane of the intestine, because such a very small quantity of it was swallowed, and because the catharsis did not take place until so long after the administration of the medicine. 4. That the cold sweating which occurred about the same time as the catharsis, indicated a direct irritation of the nerves of the sweat glands by local action of the mercury or of mercurialised blood. There were no variations in either the physiological or the therapeutical effects in any way proportioned to the erroneous variations in the doses given. We must infer that above a certain amount, the calomel remains inert because undissolved, and passes through the alimentary canal as innocuously as a marble, or, as Kohler remarks, that the large amount undissolved encloses that which is rendered soluble, in an inert mass. When the calomel is rubbed into the tongue, it seems probable that a considerable portion is converted into an albuminate, in the alkaline secretions of the mouth, and as such locally absorbed. In only two cases out of the 50 did stomatitis occur. As to the possibility of framing any theory as to the action of calomel in the cases adduced, Dr. Putnam Jacobi says, that heterogeneous as the cases are, one condition is common to all of them—namely, sudden over-distension, paralytic congestion of extensive regions of small blood-vessels. Since in so many cases the calomel relieved the symptoms dependent upon sudden extensive neuro-paralytic congestion, we must infer that it removed the congestion itself. Two theories remain. The first supposes a reflex contraction of blood-vessels by means of a powerful local stimulation of certain nerves encountered in the alimentary canal. According to the second theory we should infer, from the known diffusibility of mercury throughout all tissues, from the irritation caused by its local application to normal blood-vessels, and from the moderation of hyperæmia by local application in catarrhal inflammations—as in conjunctivitis or in gastric catarrh—that calomel causes a contraction of morbidly-distended blood-vessels, by means of direct local irritation of

their muscular coats. The strong tendency of all mercurial compounds to combine with albumen and the albuminous constituents of living tissues may probably explain this irritation, which, in morbid conditions, becomes a stimulation. On this account it should be expected to prove valuable in such cases as experience has shown to be the case—*i.e.*, where cardiac stimulants have proved unavailing to enable the central organ of circulation to overcome the immense obstacles at the periphery. This obstacle once diminished, quinine and brandy once more come into play.

GENITO-URINARY TUBERCULOSIS.

In an able report on "Recent Progress in Urinary Surgery," in *The Boston Med. and Surg. Jour.*, Oct. 2, by Dr. Curtis, that gentleman gives an interesting *résumé* of some recent contributions to our knowledge of the above subject, an abstract of which we append. Cases of the disease have mostly been observed at the Necker Hospital, in the wards of Professor Guyon, which are devoted to urinary surgery. The lesions described consist, as in other organs, of inflammatory changes, acute and chronic, supervening around foci of tubercular deposit. These may be situated in the kidneys, pelves, ureters, bladder, prostate, and urethra, as well as in the testes, epididymes, and vesiculæ seminales. Ulceration takes place, more or less deeply destructive, leaving fistulous openings and tracts, and establishing communications between the neighbouring digestive and urinary cavities. Complete excavation of the prostate sometimes occurs, as described in two instances by Carrié. The affection is not rare, as the records of the Société Anatomique show. It is observed almost exclusively in male adults, between the ages of twenty and forty-five years. It is often accompanied by the symptoms of tubercular disease in other organs, especially of pulmonary phthisis. Not infrequently, however, the disease remains for some time limited to the genito-urinary organs, forming one of the most frequently observed exceptions to the well-known law of Louis, according to which tubercle exists in the lungs if elsewhere. The symptoms vary according to the seat of the localisations. When the disease is limited to the kidneys, attacks of temporary hæmaturia occur early in the case. The clots of blood forming in the ureters and bladder may occasion kidney colic and dysuria. Often, however, the hæmaturia is unattended by pain. In some cases there is more or less polyuria, occurring in paroxysms. The urine becomes more or less purulent; pain and tenderness in the region of the kidney are complained of. The progress of the case is slow, and the diagnosis may remain obscure, until the disease has spread to other organs. Death ensues with uræmic symptoms, resulting from the extensive destruction of the renal tissues, or else with the usual symptoms of pulmonary phthisis. Tuberculosis of the bladder may

exist by itself, according to Tapret. Among the earliest manifestations are attacks of "premonitory" hæmaturia, which, though profuse, may be unattended by pain, unless clots give rise to retention. A heavy aching or burning pain in the hypogastric region is felt; the patient complains also of pain and tenderness referred to the neck of the bladder. Acute pain attending micturition precedes and accompanies the act: the approach of a call to urinate is sudden and imperious; the starting of the stream through the canal causes sharp pain; while the urine flows the patient is comfortable, but the expulsion of the last drops, which are often bloody, is again extremely painful. The quantity of urine voided is each time very small, and the calls to urinate occur with great frequency both by day and by night. In some cases the use of the sound reveals a thickened and indurated condition of the vesical floor. The disease is of slow progress and long duration, eventuating in generalised urinary tuberculosis with renal complications, or in pulmonary disease. When the prostate is the primary seat of tuberculosis, severe pain attends micturition, especially at the beginning and end of the act. Attacks of retention sometimes occur. Abscesses form and break in various directions. Fistulous tracts open into the urethra, into the rectum, or upon the perinæum around the anus. When the anterior part of the urethral mucous membrane is invaded by the tubercular disease, there is a continuous purulent discharge from the meatus independently of micturition. The passage of urine causes scalding, and the introduction of instruments shows an acutely sensitive condition of the canal.

TOPICAL USE OF ERGOTINE IN ACNE ROSACEA, ETC.

Dr. Eldridge, of Yokohama, Japan, communicates to the *N. Y. Med. Jour.* (Oct. 1879) a typical case of acne rosacea of two years' standing in a young married lady, cured in six months solely by the use of ergotine, applied during the night upon lint. Another case was one in which the disease was of ten years' standing, and the patient, a temporarily reformed drunkard over fifty years of age, having given up his drinking habits, was anxious "to take in his sign"—viz., a considerably enlarged nasal organ, of a uniform bright scarlet tint, lined with large purple veins and diversified by pustules and nodules of condensed and hardened tissue. Here Dr. Eldridge, after several days of continuous poulticing in order to soften the tissues as much as possible, injected, at intervals of three days, into the substance of the skin two or three minims of the following solution—viz., ergotine, gr. xv.; glycerin, ʒss.; water, ʒij.; thoroughly triturated and strained. The first half dozen injections were followed by the hard bosses of inflammation, threatening abscess, which are familiar to all who have used ergotine hypodermically. In no case, however, did suppuration take place, and the later injections caused but the most trifling inflammatory reaction. From a week to ten days after each injection the

field of its penetration was distinctly visible, on account of its whitened, softened, and shrunken appearance. In most cases the limit of the effect of a single injection was the size of a three-cent piece—say a circle of one centimetre diameter. Some thirty injections in all were made, when, although the treatment was discontinued, improvement did not cease, so that four months after the ergotine treatment was begun, the nose was almost natural in appearance; all hyperæmia had disappeared, and the thickened and nodular masses alluded to had, with one or two exceptions, been absorbed and removed. Dr. Eldridge has also used ergotine locally with advantage in cases of gonorrhœa and chronic otitis media. He suggests its topical application in eczema, vaginal leucorrhœa, and nasal catarrh.

BORACIC ACID IN AMMONIACAL CYSTITIS.

Boracic acid has long been known to possess the property of preventing or retarding certain of the phenomena of fermentation and putrefaction. At the same time it is quite devoid of any toxic or irritating action, when absorbed into the system or brought into contact with the tissues of the body. Hence its use in some countries for the preservation of meats for the table; hence, also, its use in antiseptic surgery. Professor Polli, of Florence (*Rev. des Sci. méd.*, Vol. XIII., p. 144), has for several years been studying the chemical and therapeutic properties of this agent. Upwards of a drachm was administered daily, dissolved in water in the proportion of one part in fifty, without the production of any symptoms of intolerance. The drug is eliminated unaltered in the urine. Polli recommends its use in chronic cystitis attended with ammoniacal decomposition of the urine within the bladder, and cites several cases in which this medication was beneficial.—*Boston Med. and Surg. Jour.*, Oct., 1879.

VENOUS PULSE ON THE BACK OF THE HAND IN PHTHISICAL PATIENTS.

M. Peter (*Jour. de Méd. et de Chir.*, Jan.) has frequently remarked a phenomenon in phthisical patients which has a certain prognostic importance. It is a kind of venous pulse, which he has described in a communication to the Société Clinique. The first case he observed was that of a woman who had reached the last stages of tuberculous asphyxia. It was noticed that the veins on the backs of her hands were bluish, turgid, and tortuous. They were the seat of marked pulsations, especially manifest at the angles of the curvature, the inflection of which got straight again quickly. This pulsation was made still more apparent by slightly compressing the wrist so as to impede the venous circulation, and thus render the veins more turgid. The venous pulsations elsewhere were more visible than palpable, the impulse of the venous wall not striking the finger in the same way as that of the arterial did; but the eye could reckon the venous pulsations and determine their synchronism with the

arterial pulsations, just as the radial pulse could be counted by the finger. M. Peter has occasionally, but rarely, observed the same phenomenon in other analogous conditions. In order to explain the mechanism of this venous pulse, M. Peter admits that the muscular fibres of the arteries in certain half-asphyxiated subjects, such as these phthisical patients are, are paralysed by an excess of carbonic acid in the blood, and that then the arteries suffer the blood to pass from them into the capillaries without having changed the interrupted progression into a continuous progression. Two other factors necessary to the production of this form of venous pulse are the frequency of the beats of the heart and their force. During the last moments of life, when the beats become feeble, the venous pulse disappears. This phenomenon is, moreover, very rare; but when it exists, it has an important prognostic value, since it is an indication of rapidly-approaching death.

DIFFERENTIAL DIAGNOSIS OF SUBCREPITANT RALES.

Dr. Edward T. Bruen, of Philadelphia, suggests the following method of deciding whether subcrepitant râles occur in the lungs or between the pleural surfaces:—While the stethoscope is being applied an assistant is directed to stand on the opposite side, pass the arms around the patient's body, and, locking the fingers, firmly compress the lower portion of the chest walls. If the râles are generated by movements of the pleural surfaces, they will then disappear, but if developed within the lungs they will persist unchanged.—*Boston Med. and Surg. Jour.*, Oct., 1879.

AN OPERATIVE METHOD TO COMBAT COMMENCING PYÆMIA.

H. Kraussold, in v. Langenbeck's Archives (Vol. XXII., p. 965), relates the case of a patient at the Erlangen Clinic, whose leg was amputated just above the knee-joint, on account of a badly united fracture, complicated with an aneurism of the posterior tibial artery. The operation was followed by repeated and alarming hæmorrhages, and the manipulations necessary to control them destroyed the antiseptic precautions, so that on the fourth day pyæmia supervened with a chill. As the cause was supposed to be a commencing suppurating thrombus of the vein, the latter was opened, and a discoloured fluid along with the contents of the thrombus escaped. Immediately after this the vein was exposed to Poupart's ligament, ligated at two points, and the intervening part, from two to three centimetres in length, removed. The femoral artery was also ligated to guard against further hæmorrhage. The temperature of the body at once sank to the normal, and the patient recovered without further bad symptoms. Ligation of the vein under similar circumstances has been performed before with good results, and as soon as the diagnosis is established one should not hesitate to resort to it.—*Cincinnati Lancet and Clinic* and *N. Y. Med. Record*, Nov. 8, 1879.

INDEX

TO THE SIXTY-EIGHTH VOLUME.

Abdominal obstruction, 145.
Acid, pyrogallic, in skin diseases, 264.
Acid, salicylic, Dr. Woods on, 119—in enteric fever, 359.
Act, Amendment of Sale of Food and Drugs, 247.
Actual cautery in medicine, 124.
Age of mother and sex of child, relation between, 65.
Alcohol, differentiation of coma from, 64.
Allingham, Mr. William, on fistula, hæmorrhoids, &c., *Rev.*, 397.
Anæmia, progressive pernicious, 186.
Anderson, Dr., pathological specimens, 175.
Aneurism, thoracic, Dr. Foot on, 404.
Antiseptic osteotomy, by Mr. Fagan, 444—surgery, by Mr. Lister, 97.
Arsenic acid in dark colours, 239.
Arsenic acid in psoriasis used hypodermically, 188.
Asthma, iodide of potassium spray in, 268.
Atthill, Dr., exhibition of specimens, 323—ovarian tumour complicating labour, 324—report of Rotunda Hospitals, 327.

Barlow, Dr. W. H., on regressive paralysis, *Rev.*, 402.
Bath, Turkish, physiology of the, 266—hot-air, in hydrophobia, 484.
Battey's operation, 149.
Beck, Dr. G., illustrirte Vierteljahrsschrift der ärztlichen Polytechnik, *Rev.*, 144.
Behrend, Dr. Gustav, die hautkrankheiten, *Rev.*, 399.
Bell, Mr. Joseph, manual of the operations of surgery, *Rev.*, 396.
Bennett, Professor, fracture of femur simulating dislocation of hip, 86—intestinal obstruction from disease of cæcum, 87—fracture of femur from direct violence, 161—comminuted fracture of head of tibia, 162—fracture of skull and rupture of pericardium, 168.
Biliary colouring matter in the urine, test for, 427.
Blood, defibrinated, for rectal alimentation, 180.
Bodenhamer, Dr. Wm., on rectal alimentation, *Rev.*, 60.
Boracic acid in ammoniacal cystitis, 515.
Bradley, Mr. S. M., injuries and diseases of the lymphatic system, *Rev.*, 387.
Brain abscess, evacuation of, 150.
Bright's disease, Dr. H. Kennedy on a case of, 493.
British Medical Association, 436.
Bromide of potassium, external application of, 431.
Browne, Dr. Walton, diseased os calcis, 176.
Bulkley, Dr. L. D., diet and hygiene in skin diseases, *Rev.*, 399—solid rubber bandage in eczema, *Rev.*, 399.

Calcium sulphide in external otitis, 144.
Calomel in ophthalmic practice, 362—the sedative dose of, 511.
Cameron, Dr. C. A., on an epidemic of fever caused by infected milk, 1—report on public health, 236—abortive and mild typhoid fever, 368.
Camphor as a hypnotic, 154.
Camphor in enteric fever, Mr. White on, 411.
Carbolic acid in malaria, 257.
Carunculæ myrtiformes, constitution of the, 363.
Catarrh, acute febrile gastro-enteric, Dr. Grimshaw on, 269.
Cautery, actual, in medicine, 124.
Cerebral white and gray substance, development of, 267.
Cervix, ulceration of the, 91.
Chapman, Dr., on the sanitary arrangements of dwellings, 273.
Children, diseases of, recent works on, *Rev.*, 392.
Chloral, enemata of, in sick headache, 184, 488.
Chorea, salicylate of soda in, 364.
Chrysophanic acid, 485.
Clinical records, 348, 404, 411.

Cobbold, Dr. T. Spencer, on parasites, *Rev.*, 130.
College of Physicians, transactions of the Medical Society of the, 66, 492.
Collins, Dr. E. W., infra-spinous luxation of shoulder and infra-clavicular luxation of scapula, 166.
Colour-blindness, 236.
Colours, dangerous, in wall-papers, 64—arsenic in dark, 239.
Coma from alcohol, differentiation of, 64.
Convalescents, homes for infectious, Dr. J. W. Moore on, 189.
Convulsions, puerperal, 337.
Cork-street Hospital Report, by Dr. J. W. Moore, 24.
Corley, Dr., femoral hernia fatal by pneumonia, 159.
Cornish, Surgeon-Major W. R., report of sanitary commissioner of Madras, *Rev.*, 212.
Curare in epilepsy, 94.
Curare in hydrophobia, 289, 315, 350.
Cystitis, milk diet in chronic, 431—boracic acid in ammoniacal, 515.

Deafness, sudden, of syphilis, 361.
Death, a forerunner of, 62.
Diaphragm, fatty degeneration of, as a cause of instant death, 454.
Diarrhœa, causes of, 245.
Diphtheria, hydrofluoric acid inhalations in, 403.
Disease, the microcosm of, by Dr. J. W. Moore, 370.
Disinfectants, experiments on, by Dr. J. L. Notter, 196.
Domestic remedies, poisoning by, 63.
Drysdale, Dr. John, germ theories of infectious diseases, *Rev.*, 140.
Dublin Hospital Sunday Fund, 1878, *Rev.*, 135.
Dublin Pathological Society, proceedings of the, 86, 159—Obstetrical Society, proceedings of the, 155, 252, 323, 500.
Duffey, Dr. G. F., periscope, 94, 180, 261, 359, 427, 510.
Dwellings, sanitary arrangements of, Dr. Chapman on the, 273.

Eclampsia, puerperal, 337 — veratrum viride in, 491.
Eczema, local treatment of, 363.
Effusion, pleural, jaborandi in, Dr. Hunt on, 365.
Embolism, fatty, 499.
Enteric fever, salicylic acid in, 359—and gastro-enteric catarrh, Dr. Grimshaw on, 269—mild, Dr. Cameron on, 368—camphor in, by Mr. White, 411.
Ergotine in acne rosacea, 514.
External urethrotomy, case of, by Dr. Thomson, 437.

Fagan, Mr. John, surgical contributions, 444.
Fatty embolism, 499.
Favus, cases of, by Dr. Walter Smith, 450.
Femur, fracture of, simulating dislocation of hip, 86.
Ferrier, Dr. David, localisation of cerebral disease, *Rev.*, 53.
Fever, epidemic of, caused by infected milk, Dr. C. A. Cameron on, 1—discussion on, 66—Hospital, Cork-street, report of, by Dr. J. W. Moore, 24—typhoid, recent works on, *Rev.*, 137—typhoid, salicylic acid in, 359—typhoid, and gastro-enteric catarrh, 269—intermittent, iodine in, 85—pilocarpin in, 361—abortive and mild typhoid, Dr. Cameron on, 368—camphor in enteric, by Mr. White, 411.
Flint, Dr. Austin, clinical medicine, *Rev.*, 455.
Foot, Dr. A. W., report on hydrophobia, 287—on thoracic aneurism, 404—commentaries on diseases of the kidneys, 414.
Forceps, 327.
Fothergill, Dr. J. Milner, antagonism of therapeutic agents, *Rev.*, 142.
Fox, Dr. G. H., removal of hair by electrolysis, *Rev.*, 400.
Funis, abnormal, 155.

Gangrene of the lungs, 260.
Gastro-enteric catarrh, Dr. Grimshaw on, 269.
Genito-urinary tuberculosis, 513.
Gonorrhœa in the male, 362.
Grimshaw, Dr. T. W., on acute febrile gastro-enteric catarrh, 269.

Hæmorrhage, *post partum*, 333.
Hallopeau, Dr., du mercure, *Rev.*, 59.
Harvey, Dr. Alexander, first lines of therapeutics, *Rev.*, 401.
Headache, sick, enemata of chloral in, 184.
Health, report on public, 236—National Board of, U.S., 248.
Heart disease, treatment of organic, 428.
Heath, Mr. Christopher, students' guide to physical diagnosis, *Rev.*, 400.
Hepatic pulsation without tricuspid regurgitation, 187.
Homes, convalescent, for infectious cases, by Dr. J. W. Moore, 189.
Hospital, report of Cork-street, by Dr. J. W. Moore, 24—Sunday Fund, Dublin, *Rev.*, 135—report of Rotunda, by Drs. Atthill and W. J. Smyly, 327—St. Thomas's, Reports, *Rev.*, 479.
Hot-air bath in hydrophobia, 484.
Huette, Dr. G., bromure de potassium, *Rev.*, 402.

Hunt, Dr. Joseph W., on jaborandi in plueral effusion, 365.
Hutchinson, Mr. Jonathan, lectures on clinical surgery, Part II., *Rev.*, 400.
Hydatidiform degeneration of retained placenta, 156.
Hydrofluoric acid injections in diphtheria, 403.
Hydrophobia, report on, by Dr. Foot, 287—curare in, 289, 315, 350—hot-air bath in, 484.
Hydrophobic tetanus, 432.
Hymen, constitution of the, 363.
Hypodermic injection of morphia, 364.

India-rubber bandage for ulcers, 95.
Indolent ulcers, sheet lead dressing for, 96.
Infectious convalescents, homes for, Dr. J. W. Moore on, 189.
Inhalations in pulmonary diseases, 183.
Injection of morphia, the hypodermic, 364.
Intermittent fever, iodine in, 85—pilocarpin in, 361.
Intestinal obstruction from disease of cæcum, 87.
Intra-uterine tumours, Dr. Kidd on, 252.
Intravascular injections of milk, 182.
Iodide of potassium in ophthalmic practice, 362.
Iodide of potassium spray in asthma, 268.
Iodine in intermittent fever, 85.
Iodoform, 488.

Jaborandi in pleural effusion, Dr. Hunt on, 365.
Journal of the Scottish Meteorological Society, *Rev.*, 390.

Kennedy, Dr. Henry, on a case of Bright's disease, 493.
Khory, Dr. R. N., digest of medicine, *Rev.*, 286.
Kidd, Dr., on intra-uterine tumours, 252.
Kidneys, commentaries on diseases of the, by Dr. Foot, 414—surgical operations on the, 434.
Kirkpatrick, Dr. Rutherfoord, on case of abnormal funis, 155.
Klein, Drs. E. and Noble Smith, atlas of histology, *Rev.*, 466.
Küstner's urine thermometer, 181.

Labour, ovarian tumour complicating, by Dr. Atthill, 324—induction of premature, 330.
Latham, Dr. P. M., works of, *Rev.*, 125.
Lead palsy, 356.
Lead, sheet, in indolent ulcers, 95.
Legs, india-rubber bandage for diseases of the, 95.
Lister, Mr. Joseph, a demonstration in antiseptic surgery, 97.
Lister's dressing, 433.
Liveing, Dr. Robert, diagnosis of skin diseases, *Rev.*, 141.
Lund, Dr. Edward, internal urethrotomy, *Rev.*, 472.
Lungs, gangrene of the, 260.
Lupus, salicylic acid in, 424.

MacMunn, Dr. C. A., spectroscopic explanation of action of nitrous oxide, 210.
Madden, Dr. More, on retained placenta, 156.
Madras, report of sanitary commissioner of, *Rev.*, 212.
Malaria, researches on the nature of, 243—carbolic acid in, 257.
Materia medica, report on, 485.
Maternity, precocious, 65.
Medical report of Cork-street Hospital, by Dr. J. W. Moore, 24—jurisprudence, report on, by Dr. Woodhouse, 61.
Medical Society of the College of Physicians, transactions of the, 66, 492—Ulster, transactions of the, 170.
Medico-chirurgical transactions, *Rev.*, 225.
Megrim, enemata of chloral in, 184—ophthalmic, 267.
Meteorological notes, 93, 179, 259, 358, 426, 510.
Meteorology, modern, *Rev.*, 477.
Microcosm of disease, Dr. J. W. Moore on the, 370.
Milk, epidemic of fever caused by infected, Dr. C. A. Cameron on, 1—discussion on, 66—intravascular injections of, 182.
Mitchell, Mr. Robert, on cancer life, *Rev.*, 483.
Moore, Dr. J. W., medical report of Cork-street Hospital, 24—sanitary and meteorological notes, 92, 178, 258, 357, 425, 509—pneumothorax from pleural fistula after thoracentesis, 164—homes for infectious convalescents, 189—the microcosm of disease, 370.
Morphia, the hypodermic injection of, 364.

National board of health, U.S., 248.
Neck, wry, Mr. Swan on, 114—excision of spinal accessory nerve for, 152.
Nerve surgery, 151—stretching, 151—suture of, 151—excision of spinal accessory, 152—neurotomy of superior maxillary, 183.
Nervous centres, early syphilitic affections of the, 360.
Neuralgia, neurotomy in, 183.
Neurotomy, 152, 183.
New Sydenham Society's works, *Rev.*, 125.
Nitrogen protoxide as an anæsthetic, 279.

Nitrous acid, estimation of, in potable water, 240.
Nitrous oxide, the action of, Dr. MacMunn on, 210.
Notter, Dr. J. Lane, experimental study of disinfectants, 196.

Obstetrical Society, proceedings of the Dublin, 155, 252, 323, 500.
Œdema, pathology of pulmonary, 185.
Œdema, rare cause of, 435.
Ointment for chronic pains, 413.
Oöphorectomy, double, 149.
Ophthalmic migraine, 267 — practice, iodide of potassium and calomel in, 362.
Osteotomy, antiseptic, by Mr. Fagan, 444.
Ovarian tumour complicating labour, Dr. Atthill's case of, 324.
Ovariotomy, by Mr. Fagan, 445.

Papilloma of skin, Dr. Walter Smith on, 492.
Pathological Society of Dublin, proceedings of the, 86, 159.
Pelletierine, tannate of, as a tæniafuge, 424.
Periscope, edited by Dr. Duffey, 94, 180, 261, 359, 427, 511.
Pernicious anæmia, progressive, 186.
Phthisis, venous pulse in, 515.
Physicians, transactions of the Medical Society of the College of, 66, 492.
Pilocarpin in intermittent fever, 361.
"Pithing," effects of, on the vascular system, 428.
Placenta, retained, 156—fatty degeneration of, 362.
Plague as it concerns England, *Rev.*, 285.
Pleural effusion, jaborandi in, Dr. Hunt on, 365.
Post partum hæmorrhage, 333.
Potassium bromide, external application of, 431.
Poultice, spice-bag, 211.
Precocious maternity, 65.
Proceedings of the Dublin Pathological Society, 86, 159—Obstetrical Society, 155, 252, 323, 500.
Progressive pernicious anæmia, 186.
Prostate, enlarged, treatment of, 152.
Psoriasis treated by subcutaneous injections of arsenic acid, 188—treatment of, 267.
Public health, report on, by Dr. C. A. Cameron, 236.
Puerperal eclampsia, 337.
Pulmonary œdema, pathology of, 185.
Pulse, venous, in phthisis, 515.
Purpura hæmorrhagica treated with astringents and faradisation, 434.
Pyæmia, operative method to combat commencing, 516.
Pyrogallic acid in skin diseases, 264.

Quinia in vesical irritation, 154.

Râles, differential diagnosis of subcrepitant, 516.
Records, clinical, 348, 404, 411.
Rectal alimentation, defibrinated blood for, 180.
Report of Cork-street Hospital, by Dr. J. W. Moore, 24—on medical jurisprudence, by Dr. Woodhouse, 61—on surgery, by Dr. Thomson, 145—of sanitary commissioner of Madras, 212—on public health, by Dr. Cameron, 236—on hydrophobia, by Dr. Foot, 287—of Rotunda Hospitals, by Drs. Atthill and W. J. Smyly, 327—St. Thomas's Hospital, *Rev.*, 479—materia medica, by Dr. W. Smith, 485.
Reports, half-yearly—medical jurisprudence, 61—surgery, 145—public health, 236—materia medica and therapeutics, 485.
Ringer, Dr. Sydney, handbook of therapeutics, *Rev.*, 401.
Rotunda Hospitals, report of, by Drs. Atthill and W. J. Smyly, 327.

Saint Thomas's Hospital Reports, *Rev.*, 479.
Sale of Food and Drugs Act, amendment of, 247.
Salicylate of soda in chorea, 364.
Salicylic acid, Dr. C. R. Woods on, 119—in enteric fever, 359—in lupus, 424.
Sanitary commissioner of Madras, report of the, *Rev.*, 212—arrangements of dwellings, Dr. Chapman on the, 273.
Sanitary and meteorological notes, 92, 178, 258, 357, 425, 509.
Saumur, brut, a new wine, 250.
Scilline, 430.
Semple, Dr. Armand, aids to chemistry, *Rev.*, 143—therapeutics, *Rev.*, 402.
Sex in utero, determination of, 64—of child and age of mother, relation between, 65.
Sheet lead dressing for indolent ulcers, 96.
Sinclair, Dr. E. B., president's address, Obstetrical Society, 500.
Skin diseases, works on, *Rev.*, 141, 399—pyrogallic acid in, 264—papilloma of, Dr. W. Smith on, 492.
Smith, Dr. J. Lewis, treatise on the diseases of infancy and childhood, *Rev.*, 392.
Smith, Dr. Eustace, on the wasting diseases of infants and children, *Rev.*, 392.

Smith, Dr. Noble, and Dr. E. Klein, atlas of histology, *Rev.*, 466.
Smith, Dr. Walter G., phthisis fatal by pneumothorax, 167—cases of favus, 450—diffuse papilloma of skin, 492—report on materia medica and therapeutics, 485.
Smyly, Dr. W. J., report of Rotunda Hospitals, 327.
Society, transactions of the Medical, of the College of Physicians, 66, 492—proceedings of the Dublin Pathological, 86, 159—Obstetrical, 155, 252, 323, 500—Ulster Medical, transactions of the, 170.
Solanaceæ, influence of the poisonous, 489.
Spectroscopic explanation of action of nitrous oxide, by Dr. MacMunn, 210.
Spice-bag poultice, 211.
Squill, the active principles of, 430.
Squire, Mr. Balmanno, atlas of skin diseases, *Rev.*, 59.
Strychnia, anatomical and physiological effects of, 61.
Students, address to, by Dr. Woodhouse, 351.
Surgery, a demonstration in antiseptic, by Mr. Lister, 97—report on, by Dr. Thomson, 145.
Swan, Mr., on wry neck, 114.
Syphilis, sudden deafness of, 361.
Syphilitic affections, early, of nervous centres, 360.

Temperatures, local, in disease, 261.
Tetanus, hydrophobic, 432.
Therapeutics, recent works on, *Rev.*, 401—report on, 485.
Thompson, Sir Henry, diseases of urinary organs, *Rev.*, 140.
Thomson, Dr. W., report on surgery, 145—case of external urethrotomy, 437.
Thomson, Mr. Wm., recent works on typhoid fever, *Rev.*, 137.
Thoracic aneurism, Dr. Foot on, 404.
Thorowgood, Dr. J. C., Lettsomian lectures on bronchial asthma, *Rev.*, 233.
Transactions of the Medical Society of the College of Physicians, 66, 492—Ulster Medical Society, 170—Medico-Chirurgical, *Rev.*, 225.
Trichinosis in Spain and France, 62.
Tuberculosis, genito-urinary, 513.
Turkish bath, physiology of the, 266.
Typhoid fever, recent works on, *Rev.*, 137—abortive and mild, Dr. Cameron on, 368.
Tyson, Dr. James, practical examination of urine, *Rev.*, 403.

Ulceration of the cervix, 91—cured by grafting, 185.
Ulcers, treatment of, 95, 96.
Ulster Medical Society, transactions of the, 170.
Urethrismus, 153.
Urethrotomy, external, case of, by Mr. Thomson, 437.
Urine thermometer, 181—test for biliary colouring matter in the, 427.
Urticaria, bisulphite of soda in, 158.
Uterus, ulceration of the neck of the, cured by grafting, 185—extirpation of the, 235.

Vaccination, imperfect, 238.
Vaginismus, 435.
Venous pulse in phthisis, 515.
Veratrum viride in eclampsia, 491.
Version, 330.
Vesey, Dr. Agmon. B., clinical records from Magherafelt Union Hospital, 348.
Vesical irritation, quinia in, 154.
Vital Statistics, 92, 178, 258, 357, 425, 509.

Walker, Mr. G. E., essays in ophthalmology, *Rev.*, 280.
Wall-papers, dangerous colours in, 64.
Water, estimation of nitrous acid in, 240—rational system of examining potable, 241.
Wheelhouse's method of external urethrotomy, by Mr. Thomson, 437.
White, Mr. George B., on camphor in enteric fever, 411.
Whitla, Dr., stricture of œsophagus, 175.
Wilson, Mr. Erasmus, lectures on dermatology, *Rev.*, 142.
Wilthaus, Dr. R. A., essentials of chemistry, *Rev.*, 143.
Wine, a new, 250.
Woodhouse, Dr. S., report on medical jurisprudence, 61—address to students, 351.
Woods, Dr. C. R., on salicylic acid, 119.
Works on typhoid fever, *Rev.*, 137—on diseases of the skin, *Rev.*, 141, 399—for students, *Rev.*, 143—on diseases of children, *Rev.*, 392—on therapeutics, 401.
Wry neck, Mr. Swan on, 114—excision of spinal accessory nerve for, 152.

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